

Navy Medicine

May - June 2008



A century of Navy nursing

NAVY MEDICINE

Official Publication of the U.S. Navy Medical Department
Volume 99, No. 3
May-June 2008

Surgeon General of the Navy
Chief, BUMED
VADM Adam M. Robinson, Jr., MC

Deputy Surgeon General
Deputy Chief, BUMED
RADM Thomas R. Cullison, MC

Editor-in-Chief
Jan Kenneth Herman

Managing Editor
Janice Marie Hores

Staff Writer
André Baden Sobocinski

We Want Your Opinion

Letters to the Editor are welcome. Let us know what you think about *Navy Medicine*. Please send letters to: Janice Marie Hores, Managing Editor, Bureau of Medicine and Surgery (M09B7C), 2300 E Street, NW, Washington, DC, 20372-5300 or Janice. Hores@med.navy.mil or 19native47@verizon.net

Navy Medicine, (ISSN 0895-8211 USPS 316-070) is published bimonthly by the Department of the Navy, Bureau of Medicine and Surgery (M09B7C), Washington, DC 20372-5300. Periodical postage paid at Washington, DC.

POSTMASTER: Send address changes to Navy Medicine, Bureau of Medicine and Surgery, ATTN: M09B7C, 2300 E Street NW, Washington, DC 20372-5300.

Personal subscription address changes: write to Navy Medicine, Bureau of Medicine and Surgery, M09B7C, 2300 E Street, NW, Washington DC 20372-5300, or email Janice. Hores@med.navy.mil or 19native47@verizon.net. Include old and new addresses when submitting a change of address to the above.

The Secretary of the Navy has determined that this publication is necessary in the transaction of business as required by law. *Navy Medicine* is published from appropriated funds by authority of the Bureau of Medicine and Surgery in accordance with Navy Publications and Printing Regulations P-35.

The use of a name of any specific manufacturer, commercial product, commodity or service in this publication does not imply endorsement by the Navy or the Bureau of Medicine and Surgery. Any opinions herein are those of the authors, and do not necessarily represent the views of *Navy Medicine*, the Navy Department or the Bureau of Medicine and Surgery or the Department of Defense.



Cover: May marks the 100th anniversary of the Navy Nurse Corps. Cover design by Shane Stiefel, Navy Medicine Support Command, Visual Information Directorate, Bethesda, MD.

Online issue of *Navy Medicine* can be found at:
<http://navyhistory.med.navy.mil/Publications/NavyMedicineMagazine.html>

C o n t e n t s

Features

22 **Holy Cross Sisters: Forerunners of the Navy Nurse Corps**
Sr. M.D. Maher, CSA, Ph.D.

24 **Standing By, Ready to Serve: The Case for Forensic Nurses in Uniform**
LT M. Ortiz, NC, USN

28 **“All They Have Is Each Other”**
CAPT O. Willis, NC, USNR (Ret.)

Departments

6 *Admiral's Call*

8 *Department Rounds*

30 *Forum*

Building A Sea-Based Medical Support System PART III: Fundamental Medical Support Requirement for Sea-Based Expeditionary Operations
CAPT A.M. Smith, MC, USNR, (Ret.)

34 *In Memoriam*

RDML Mary J. Nielubowicz, NC, USN

35 *A Look Back*

Navy Medicine 1928

Articles and Book Review Submissions

Navy Medicine considers for publication photo essays, artwork, and manuscripts on research, history, unusual experiences, opinion, editorials, and professional matters. Contributions are suitable for consideration by *Navy Medicine* if they represent original material, have cleared internal security review, and received chain of command approval. An author need not be a member of the Navy to submit articles for consideration. For guidelines on submission, please contact: Janice Marie Hores, Managing Editor, Janice.Hores@med.navy.mil or 19native47@verizon.net

Navy Medicine is also looking for book reviews. If you've read a good book dealing with military (Navy) medicine and would like to write a review, the guidelines are:

- Book reviews should be 600 words or less.
- Introductory paragraph must contain: Book name by author. Publisher, city, state. Year published. Number of pages.
- Reviewer ID: sample:

CAPT XYZ is Head of Internal Medicine at Naval Medical Center San Diego.

I look forward to hearing from you.

SAVE A TREE

If you would like to receive your issue electronically via email in PDF format, please contact Janice Marie Hores, Managing Editor, at Janice.Hores@med.navy.mil or 19native47@verizon.net

This may be anticipating CAPT Arthur Smith's further contributions, but his comments about Navy medicine and the future shape of expeditionary warfare raise a subject which must be addressed. This issue is the care and movement of the wounded. The FRSS system and the revamping of the medical battalions have, to a certain extent, provided a solution to "biology." For those patients with life or limb threatening wounds, prompt transportation to a facility (such as the FRSS) within a very short period of time, the "golden hour" plus some, is what will allow life and limb salvage. However the next step to something less austere than an FRSS where more definitive surgery as opposed to minimal damage control surgery is performed also has a relatively short time line. This means that either something more robust than an FRSS must be established ashore relatively close to the FEBA or there must be a significant allocation of aviation assets such as the MV-22 to a dedicated MEDEVAC role. These decisions about allocation of aviation assets, and their logistic support including POL, must be made early on—both in the development of doctrine for "sea-based" expeditionary forces and in the OPLAN for any single action.

The most recent conflicts we have been involved in; OIF, OEF, Desert Shield/Storm, Bosnia, Somalia, and Grenada all involved relatively low casualty density per unit time, and were in conditions where there was no enemy counter-air. In addition, Air Force intra-theater and inter-theater casualty evacuation assets and facilities were readily available and robust. In an expeditionary action with a sea-base these assets will not be available, certainly not as they are utilized today. Additionally, when looking at Navy/Marine air assets we must remember that medical/casualty evacuation is a secondary mission and there are no dedicated assets. While the Army has those assets, and we do fight a joint fight, deploying Army air ambulance assets in support of sea-based expeditionary actions would be problematic for several reasons. Army aviators do not routinely make over-water flights of any distance, they don't land on waterborne platforms, and putting their aircraft on the sea base would mean adding logistics and personnel for service/aircraft specific parts and maintenance.

Nothing less than a thorough analysis of these issues is needed, as well as some thinking about what might happen if the casualty rates were higher than what we have been fortunate enough to deal with in the recent past. Expecting everything to go our way is not a plan. A desire to keep the footprint ashore "light" does not change the biological and temporal realities of casualty care. The reality is that medical air assets will not be full with every flight optimizing the number moved per unit time. Most, if not all, our potential enemies will consider any vehicle, land or air, marked with a

red cross to be a prime target. There is not a single solution, but a range of possible solutions. However, if one decreases casualty care ashore one must dedicate assets to move the wounded rapidly to where they can be treated, and look at the time/distance factors involved. Unlike exercises, in the real world with real wounded you can't reset the board when over-optimistic estimates clog the system.

All members of the team need to get involved. This includes the doctors who care for the wounded, the aviators, the logisticians, etc. Each has an area of expertise that needs to be represented. In the end, the appropriate command authority will allocate resources and accept risks. It is our job in Navy medicine to ensure that our input is accurate and well thought out so that the commander has the data he or she needs to make the hard decisions. I might further add that it is the members of Navy medicine with operational/field experience who should carry the torch in this endeavor.

—CAPT Steve Oreck, MC, USN (Ret.)

I read the March-April 2008 *Navy Medicine*. What a great publication. Of particular interest was the piece "Get Me To Charlie Med!" It brought back some pleasant memories. I served in Viet Nam in the early 60's with a Marine Corps Unit. Our casualties were sent to Charlie Med.

Also of note was the photo Navy Medicine 1944, A Look Back. My uncles served in the Pacific theater during WWII. Keep up the great articles and photos.

—HMCM/FMF Jim Lowery, USN (Ret.)

I have for some time wanted to let you all know what a great job you are doing with Navy Medicine. The articles and photos are first class, the layout is very well done, and I especially enjoy the historical articles and pictures. Even the non-glossy paper that you have been using for the magazine of late adds depth to the photographs (I don't know if that was intentional). In any event, please keep up the great work. We don't want to see the magazine go away.

—Steven Carrier, NNMC Bethesda

The article, “Back Pain and Prolonged Compromised Posture in Vehicles,” in the March-April/2008 issue of *Navy Medicine* discusses the prevalence of back pain due to prolonged sitting in vehicles that do not allow for maximum spinal stability. The author, LTJG Sarah D. Thomas, does an excellent job of giving specific recommendations to adjust vehicle seat angulation which resulted in subjective improvement of back pain complaints.

In the 5-plus years that I have been examining and treating patients for spinal complaints it is noteworthy that patients who have deployed to Iraq and Afghanistan state that spinal symptoms often increased while deployed. Various reasons reported for the increase in back/neck pain were increased stress, prolonged sitting, and less than desirable sleeping conditions. The majority of patients that have been deployed,

and often multiple deployments, state that they needed continued chiropractic care, in addition to medical care. Many patients have reported that pain medication provided temporary relief and felt that chiropractic care would have increased their functional capabilities while deployed.

It is well known that 60-70 percent of all patient complaints in any doctor’s office are neuromusculoskeletal and this percentage is the same within the military environment. The VA has recently reported that the majority of complaints of Iraq/Afghanistan veterans are neuromusculoskeletal. Chiropractic care has been serving active duty personnel since 1994, unofficially, and officially since 2001. Currently, approximately 55-60 percent of active duty personnel globally have access to chiropractic care. Perhaps it is time to increase the accessibility to 100 percent.

—Arthur J. Durham, D.C., Division Head, Chiropractic Clinic, Naval Health Clinic, Cherry Point, NC.



THE NURSE CORPS COMMEMORATES 100 YEARS OF DEDICATED MEDICAL SERVICE

The Nurse corps (NC) memorialized its 100th anniversary of dedicated service with a wreath laying ceremony at the Navy Memorial, Washington, DC, on 2 May.

RADM Edward K. Walker, Jr. (Ret.), Navy Memorial Treasurer, hosted the event. RADM Christine Bruzek-Kohler, NC, Director of the Navy Nurse Corps; RADM Karen Flaherty, NC, Director Navy Nurse Corps Reserve; and John F. Mulhern, Director, U.S. Navy Memorial; were among the honored guests and participants in the ceremony. CAPT Kathleen Pierce, Deputy Director, Navy Nurse Corps was Master of Ceremonies.

“What links us with our Nurse Corps predecessors who served 100 years ago, and throughout the years, is what makes us unique; it is what called us to naval service. Each of us joined the Nurse Corps looking to make a difference and to serve this great country we love,” said Bruzek-Kohler.

As a symbol of respect and honor to the nurses who have served and are currently serving, and for those nurses who have died, Bruzek-Kohler, Flaherty, and Mulhern placed a wreath at the foot of the Lone Sailor statue at the memorial while the Navy Band played “Taps.”

The true mission of the Nurse Corps, both today and in 1908 when the corps was first established, has remained unchanged—caring for our nation’s warriors as they go into harm’s way. Nurses play an invaluable role in Navy medicine.

President Theodore Roosevelt signed the Naval Appropriations Bill authorizing the establishment of the Nurse Corps as a unique staff corps of the Navy on 13 May 1908. The first applications to the Nurse Corps were sent by women from around the nation to BUMED. These candidates were required to travel to Washington, DC, at their own expense and take oral and written examinations.

Over 4,000 active duty and reserve Navy nurses are serving in operational, humanitarian, and traditional missions on the home front and abroad. These men and women provide professional nursing care in peacetime and wartime under ordinary and extraordinary circumstances. Navy nurses are essential to Navy medicine’s Force Health Protection mission, integrating compassion with discipline, individuality with conformity, and wellness promotion with wartime readiness. ⚓

—Story by Christine A. Mahoney, Bureau of Medicine and Surgery Public Affairs.




The Navy Nurse Corps 100th Anniversary wreath rests in front of the statue of the Lone Sailor at the Navy Memorial in downtown Washington, DC. Photo by Christine Mahoney

One hundred years ago, a small group of trained nurses reported to Naval Hospital Washington, DC. The facility was so new, nurses quarters were not yet available. Given an allowance and subsistence pay, these women rented a house and their own mess. They served without rank or recognition as an “official” staff corps. They were part of the military culture, yet—as the only women in the Navy—still an anomaly. As one of them would later recall, “we were no more welcome to most of the personnel of the Navy, than women are when invading what a man calls his domain.” With the passage of time, these “Sacred Twenty” persevered and proved their worth to their colleagues and their Navy. As the years went by, the Corps’ personnel would expand and, beginning in 1965, include male nurses. In 1947, the Nurse Corps was finally acknowledged as an official staff corps and its members received permanent officer status and rank.

Since then, opportunities for Navy nurses have grown significantly. The first Navy nurses could only serve at one hospital: Naval Hospital Washington, DC (1908). Today over 4,000 active duty and reserve Navy nurses answer the call whether it is at the patient’s bedside in a military hospital, aboard an aircraft carrier transiting the world’s oceans, on a joint-humanitarian mission aboard USNS *Comfort* or *Mercy*, in an intensive care unit at Landstuhl, Germany, or in the frontlines in Iraq and Afghanistan. Through this remarkable evolution one thing has been consistent: Navy nurses have always cared, served, and sacrificed for the Navy and their nation.

In the last century, the rolls have included many who served overseas and on the frontlines—those who lived and died in contagious disease wards during the Spanish Influenza pandemic, Navy nurses who treated and cared for the sick and wounded in World War I base hospitals, at World War II internment camps in the Japanese occupied Philippines, at Pacific bases, and aboard hospital ships and evacuation aircraft in World War II, the Korean and Vietnam Wars, and during the first Gulf War. Throughout their history, our nurses have dedicated their hearts, souls, and for many, their lives, caring for sailors and Marines. Their versatility, enthusiasm, and passion have enabled Navy medicine to carry out our mission anytime, anywhere. I am extremely proud of the Nurse Corps for delivering compassionate nursing care to those deployed in harm’s way and to all entrusted to our care.

As we celebrate the Navy Nurse Corps 100th birthday, please take time to reflect on how rewarding a career nursing can be and, if you are a nurse, to share your passion for nursing with others. This year is an opportunity to take pride in what you accomplish and, hopefully, to inspire others to choose this challenging and fulfilling profession. It takes a special individual to pursue a career in nursing. It requires a genuine heartfelt passion and the desire to help patients and families through all stages of illness and recovery. In Navy medicine, we have enduring respect and admiration for our nurses. I ask you to join me in honoring these professionals. Take the time to say “Thanks for all you do.”

A century after the founding of the Navy Nurse Corps, we thank them and wish all Navy nurses—past and present—a Happy 100th birthday! 



We are a nation at war, and the true mission of the Navy Nurse Corps both today and in 1908 when we were first established by Congress has remained unchanged—caring for our warriors as they go into harm's way. We mend the wounds of war, wounds both visible and invisible.

What links us with our predecessors who served 100 years ago and every day in between is indeed what makes us unique...and it is indeed that which called us to naval service in the first place. Each of us joined the Navy Nurse Corps looking to make a difference, to do our part, and to serve this great country that we love. We left our comfort zones, our families and friends, and our hometowns in search of a life that would give us more meaning. For each of us, the stories may be different, but I'm sure all would say that being a part of the Navy Nurse Corps has exceeded all expectations, and has provided incredible personal and professional rewards. Our colleagues are our lifelong friends and we have served with them in varied practice environments overseas, onboard ships, in medical centers, in clinics, in medevac helos, in tents, in austere conditions, and under the hostile conditions of war. As a result, the Navy Nurse Corps has given us a rich life without regret and a life that will never be the same.

We took an oath to support and defend the Constitution of the United States against all enemies foreign and domestic. We face the challenges of national service with a willingness to embrace the unknown and seek adventures, whether at peace or at war. As leaders, at all ranks, we are given opportunities and responsibilities often reserved for someone more senior or experienced. And each time, we, as Navy nurses, accomplished more than others thought possible. The Navy Nurse Corps has taught us all so much, built upon a foundation that encompasses hard work, lifelong learning, cooperation, and teamwork, always challenging...always memorable.

While we were drawn to the Navy Nurse Corps for different reasons—service to country, education, travel, family, friends, or to follow a dream, we all stayed for the same reasons. We care deeply for our patients, our corpsmen, and being part of something bigger than ourselves. We are honored to serve the men and women of the Navy and Marine Corps, ensuring their health and readiness and nursing their wounds in their hour of need.

The practice of nursing has changed over the last 100 years with research and technology, but the basic tenets of the profession are unchanged and timeless. We volunteered to wear the uniform, to practice our profession in a different environment, and through this we have unlocked the secrets to our humanity and what is most important about caring for those willing to make the supreme sacrifice. Thanks to the generations of Navy nurses who moved us forward through other wars, we have a solid foundation in which to meet the challenge of tomorrow. Our junior officers are our future and based on the passion and competence I see daily, our future looks bright indeed. We exist because we were and are mission essential. They needed us then; they need us now. We can be proud of what we have done and should be inspired by what we have left to do in the next 100 years, for we are Navy nurses! As your Director, I am proud, I am humbled, and I salute you. Happy 100th birthday, Navy Nurse Corps!✌

—RADM Christine M. Bruzek-Kohler, Director, Navy Nurse Corps



NEW MEDICAL DEPARTMENT FLAG SELECTS

CAPT Michael H. Anderson, MC, received a BA from the University of California, San Diego. After being commissioned an ensign, he earned his MD from the Uniformed Services University of the Health Sciences. CAPT Anderson returned to California where he completed his internship in family medicine at Camp Pendleton.



His first assignment as a general medical officer was with the First Force Service Support Group, and he was later deployed to the Western Pacific with the Eleventh Marine Amphibious Unit. When he returned to Naval Hospital Camp Pendleton, CAPT Anderson completed his residency in family practice. That was followed by an assignment to the medically remote Naval Communication Station, Harold E. Holt, Exmouth, Western Australia.

Dr. Anderson returned from Australia to join the faculty of Puget Sound Family Medicine Residency. He deployed with the Bravo Surgical Company, 2d Medical Battalion to Guantanamo Bay, Cuba in support of the initial Haitian migrant relief effort in November 1991.

In June 1995, he accepted an assignment as the Director of Clinical Services at U.S. Naval Hospital Keflavik, Iceland. He returned again to Naval Hospital Bremerton and served as the Director of Medical Services until he became the executive officer of Naval Hospital Cherry Point in August 2000.

His next assignment was commander of Naval Hospital Great Lakes. While there he completed the requirements for a masters in health administration from the University of North Carolina, Chapel Hill.

By August 2006 he had championed a transformational relationship with the Department of Veterans Affairs that established a new form of joint healthcare delivery within the federal government.

Dr. Anderson is currently serving as the Deputy Medical Officer of the Marine Corps, Headquarters Marine Corps. His awards include the Legion of Merit, Meritorious Service Medal (third award), Navy and Marine Corps Commendation Medal (second award), and the Navy and Marine Corps Achievement Medal.

CAPT William R. Kiser, MC, received his BA from Abilene Christian University in Abilene, TX, and his MD from the University of South Florida College of Medicine. He is Board Certified in Family Practice with a Certificate of Added Qualification in Geriatrics.

CAPT Kiser's previous duty assignments include service as a general medical officer aboard USS *Constellation* (CV-64); staff family physician at Naval Hospital, Guam; faculty family physician at Naval Hospital Camp Pendleton, CA; staff family physician aboard USNS *Mercy* (T-AH 19) during Operation Desert Shield and Desert Storm; director of residency training, the family practice residency, Naval Hospital, Jacksonville, FL; family practice specialty leader; executive officer and then commanding officer, USNH Guam. While Pacific Fleet surgeon he held primary medical responsibility for the deployment of *Mercy* in support of Operation Unified Assistance I and II, and the *Mercy* humanitarian deployment of 2006. Since 2007 he has served as the Assistant Deputy Chief of Staff for Clinical Operations and Chief Medical Officer for Navy medicine (BUMED M3C).



Dr. Kiser also holds the following degrees: MA in social science from Pacific Lutheran University; Master of Strategic Studies from the Air War College; MBA from Western Governors University; and a Master of Ministry degree from Newburgh Theological Seminary.

Dr. Kiser is a Fellow of the American Academy of Family Physicians and former President of the Uniformed Services Academy of Family Physicians. He has held faculty appointments at the University of Washington College of Medicine, Texas A&M University College of Medicine, and the Uniformed Services University of the Health Sciences. He previously represented the Navy to the AMA Section on Medical Schools, and is the 2005 recipient of the John P. McGovern Award from Texas A&M College of Medicine.

Dr. Kiser is also a member of the Society of Teachers of Family Medicine, the Christian Medical Dental Society, and a life member of the United States Naval Institute. He has published and lectured widely on various topics, including ethics, medical humanities, evidence based

healthcare, and change management. Dr. Kiser's personal awards include the Legion of Merit (with Gold Star in lieu of second award), the Meritorious Service Medal, and the Navy and Marine Corps Commendation Medal (two awards). ⚓



CAPT Elizabeth S. Niemyer, NC, received her nursing degree from the University of Maryland School of Nursing. She was commissioned a lieutenant in the Navy Nurse Corps in 1981.

CAPT Niemyer's duty stations include National Naval Medical Center Bethesda, MD, Naval Medical Clinic Quantico, VA, and Naval Hospital Camp Pendleton, CA. Promoted to lieutenant commander in 1988, she transferred to Naval Hospital, Okinawa, Japan. While stationed there she received her Master of Science Degree in Human Resource Management from Chapman University. From Okinawa she was selected to attend graduate school at San Diego State University as a full time student in the Education and Training Management Subspecialty Program where she completed a Master of Arts in Education with an emphasis in Education Technology.

Following her graduate studies, CAPT Niemyer was stationed at National Naval Medical Center, Bethesda, MD; was Executive Officer and Commanding Officer of Naval Hospital Rota, Spain; and Executive Director, TRICARE Area Office – Europe.

She currently serves at the Assistant Deputy Chief of Staff for Operations for the Bureau of Medicine and Surgery.

CAPT Niemyer is a graduate of the Naval War College, non-resident Program. Her personal decorations include the Defense Superior Service Medal, Legion of Merit, Meritorious Service Medal (Gold Star), Navy Commendation Medal, Navy Achievement Medal, and National Defense Medal (Bronze Star). ⚓



COMMANDER ELECTED TO AMERICAN COLLEGE OF HEALTHCARE EXECUTIVES COUNCIL OF REGENTS

CDR Robert S. Fry, MSC, Director for Administration, Naval Health Clinic, Cherry Point, has been appointed to the Council of Regents of the American College of Healthcare Executive (ACHE). The Council is the legislative body, and serves as the vital link between ACHE and affiliates by approving governance and membership regulations as well as promoting ACHE programs, services, and activities within their respective areas.

CDR Fry took office at the Council of Regents meeting in March 2008, during ACHE's 51st Congress on Healthcare Leadership in Chicago. As a Regent, Fry will represent ACHE's membership in the Navy, Coast Guard, and the Public Health Service.

Fry has served as the Director for Administration at the Naval Health Clinic, Cherry Point, NC, since October 2005. Prior to this position, he was the Department of Defense Program Manager for Population Health at the Office of Assistant Secretary of Defense for Health Affairs and TRICARE Management Activity. Fry has over 26 years of service in Navy medicine with 9 years as a corpsman. He has been stationed at the Naval Regional Medical Center in Portsmouth, VA; 1st Marine Aircraft Wing on Okinawa; Pacific Missile Test Center at Point Mugu, CA; Naval Hospital Jacksonville FL; Fleet Hospital Program in Alameda, CA; U.S. Naval Hospital in Naples; and the Bureau of Medicine and Surgery. In 2002, he earned his Doctorate in Health Policy and Management while on duty under instruction orders at the University of South Florida in Tampa.

In May 2008, Fry reports as the Director for Medical Manpower in the Office of the Chief of Naval Operations (OPNAV N931). ⚓



RDML Richard R. Jeffries has been nominated for appointment to the rank of rear admiral upper half. Jeffries is currently serving as Commander, Navy Medicine Capital Area and Commander, National Naval Medical Center, Bethesda, MD. ⚓



NAVAL MEDICAL RESEARCH CENTER CLOSES IN ON MALARIA CURE

Doctor, this will be a long war if for every division I have facing the enemy I must count on a second division in the hospital with malaria and a third division convalescing from this debilitating disease!”

Those were the words of GEN Douglas MacArthur in May 1943. Almost 65 years later, there is still no cure for malaria. But thanks to the efforts of dedicated researchers like the members of the Naval Medical Research Center (NMRC) Malaria Program, a cure is much closer. What’s more, the disease no longer hospitalizes the massive numbers of combat troops that it did in World War II, Korea, and even Vietnam.

NMRC is internationally recognized as a premier center for malaria research. “We’re recognized because we’ve been at this business for a long time,” said CDR David J. Fryauff, deputy director, Military Malaria Vaccine Program and chairman of the Institutional Review Board at NMRC. “We, as a military force, have had firsthand and devastating experiences with this parasitic enemy. The Navy and Marine Corps are big organizations with lots of people at risk. But, we also have a lot of talent, outstanding scientific credibility, and excellent laboratory facilities both here within the United States and internationally.”

NMRC uses a variety of partnership approaches to facilitate collaborative research and development activities. NMRC, the Department of Defense (DOD), and the Office of Naval Research (ONR) have entered into cooperative agreements with biotechnology and academic partners to support vaccine development efforts.

A significant milestone occurred in July 2007 when NMRC and the Walter Reed Army Institute of Research (WRAIR) were formally unified. They joined staffs and facilities to form the U.S. Military Malaria Vaccine Program (USMMVP). This union is the culmination of more than five decades of cooperation in the field of malaria research between the two services.

The NMRC malaria program can be broadly categorized into four separate areas: Genomics and applied genomics research, basic research, preclinical research and development, and clinical trials. Researchers in genomics and applied genomics identify new malaria antigens from genomic sequence data and the transition of genomes to vaccines.

The focus of basic research is strategic identification and characterization of the mechanisms of protective immunity against malaria.

The preclinical research and development group develops and evaluates experimental vaccines and vaccine delivery systems in multiple animal models. In clinical trials, candidate vaccines are tested either alone or as part of a controlled group of prime-boost immunization strategies for safety, immunogenicity, and protection.

What is Malaria?

Malaria is a single-celled protozoan that is a parasite of both the mosquito and humans. Its proper scientific name is plasmodium. Researchers have determined that only four species of plasmodium can be transmitted to humans: plasmodium malaria, plasmodium ovale, plasmodium vivax, and plasmodium falciparum—which kill about 1.5 million people annually. Most deaths are among young African children. According to Fryauff, only females in 40 of the 400 different species of Anopheles mosquitoes can transmit human malaria. These mosquito species are found throughout the world, including within the United States.

History of Malaria and the U.S. Military

The U.S. military’s malaria program began in the Pacific theater during World War II and continues today as U.S. military personnel battle in Iraq. During this time the Navy stood up its first Malaria Control Unit in the South Pacific at the New Hebrides and Solomon Islands. This campaign would lead the Navy to transform a typhus research center based in Cairo, Egypt, into a facility that would also focus on malaria research. Naval Medical Research Unit-3 in Cairo is one of three NMRC overseas research laboratories performing research in a number of areas including malaria. “Historically, malaria has been the largest cause of military casualties during deployments to tropical areas,” said CAPT Tom Richie, a physician and the malaria program director at NMRC. “Malaria took a heavy toll in lives and lost man-hours in World War II and the conflicts in Korea and Vietnam, and there is ongoing exposure to malaria in Iraq.” Advancements in research and combating malaria are evident in the military campaigns since the development of the program. During World War II there were more than 605,000 new cases of malaria in the U.S. military forces, resulting in 12 million sick-days. During Vietnam there were only 65,000 new cases and 1.2 million sick-days. There have been no malaria deaths in the U.S. military since an Army Special Forces soldier died following a mission to Nigeria in 2002. However, malaria continues to affect troop readiness. Mission effectiveness was impacted as recently as August 2003 during a Marine Corps deployment to Liberia. “This mainly reflects the fact that malaria is not very prevalent in the locations where we are currently deployed,” explained Fryauff. “If



Preventive Medicine Technician (PMT) HM1 Jonathan Wells removes a light trap provided by the Centers for Disease Control (CDC) from a tent city area at NAS JRB New Orleans. Photo by MC1 James Pinsky

we were to deploy to sub-Saharan Africa, for example, the number of incident cases would increase dramatically.”

Current Malaria Treatment

The immediate goal of the joint USMMVP is to develop a vaccine against *Plasmodium falciparum* malaria that protects 80 percent or better of recipients against infection for a minimum of 6 months, whether they're malaria-naïve travelers or residents of endemic areas. Drugs are currently available that, when used properly and in a timely manner, are almost 100 percent effective in preventing malaria in U.S. military

forces. Anti-malarial drugs such as quinine and artemisinin are currently used to treat malaria infection, while doxycycline, malone, mefloquine, and primaquine are available to prevent the infection.

Mefloquine, in particular, has been a mainstay in the DOD malaria drug armamentarium that has proven highly effective for both prevention and treatment. But not everyone can take mefloquine due to uncommon yet considerable side effects.

“As with all diseases, Navy medicine's emphasis isn't in treatment and recovery but in knowing the risk and preventing its infection,” said Fryauff. “It is much better for all of us to prevent rather than treat diseases because too often problems and complications occur if the infection has already taken hold and disease has set in, and the impediment to mission success has already occurred.”

But, taking on this endeavor isn't without its challenges. “Malaria has developed a resistance to all the drugs we've come up with since World War II,” Fryauff said. “Still, we're constantly coming up with new drugs to outsmart malaria before infection occurs.”

The Future of Malaria Prevention

With some diseases, such as typhoid fever, a vaccine is simply injecting a dead strain of the virus into the human body and allowing the body to develop immunity against the virus. Malaria, however, is a more complicated organism, is difficult to work with in a laboratory environment, and evades the host's immune response, thus making it a more difficult candidate for vaccination.

But, Army and Navy researchers have successfully induced an unnatural malaria immunity that completely blocks infec-


tion by using gamma radiation within the parasite carried in the mosquito. These mosquitoes would then be used as the injector mechanism. This process is convenient because it can all be done inside a lab.

More than 300 human volunteers have been safely immunized by mosquito bites injecting the radiation-weakened *falciparum* malaria. Ninety-five percent of these volunteers also developed immunity against the fully intact parasite. This protection lasted up to 9 months. Though it was successful against infection, it wasn't a cure for the illness.

Fryauff said NMRC has been using molecular engineering to use a weakened form of the adenovirus (responsible for common colds) to serve as a vaccine carrier that delivers specific malaria genes into human cells. Ideally the immune system is primed and capable when the malaria parasite appears. “We hope to induce immunity that provides two layers of protection against infection and illness,” said Fryauff.

Finally, USMMVP researchers will evaluate and attempt to perfect a new mosquito-free form of the radiation-weakened malaria vaccine through a partnership with the Rockville, MD, firm Sanaria. Parasites will be harvested and extracted from carriers (female *Anopheles* mosquitoes), purified, bottled, and then frozen.

Clinical trials planned for summer 2008 will be conducted with human volunteers. Because researchers already anticipate that the initial trials will go well, Navy researchers are already planning studies with long-term partners in Ghana, West Africa, to test the new vaccine in the young children who are most vulnerable to infection.

“For both Navy and Army malaria researchers there has never been a more exciting time to be in the vaccine business,” professed Fryauff. 

—By MC1(SW) Nick De La Cruz, Navy Medicine Support Command Public Affairs.

NAVY AWARDS CONTRACT FOR NEW WALTER REED FACILITY

A joint venture of Clark Construction of Bethesda, MD, and Balfour Beatty Construction, based in Atlanta, GA, received a \$641.4 million contract from the Naval Facilities Engineering Command to design and build the new Walter Reed National Military Medical Center in Bethesda, MD.

The Navy command will oversee the planning and construction.

“I am confident that the new Walter Reed National Military Medical Center will be the crown jewel in an already illustrious military medical system. The most important mission for us is to provide the highest levels of care, comfort, and convenience to our wounded heroes so they can focus on

the most important mission of all, healing,” said Dr. S. Ward Casscells, assistant secretary of defense for health affairs.

The establishment of the new center on the grounds of the National Naval Medical Center was congressionally mandated under the 2005 Base Realignment and Closure Act, which recommended the realignment of Walter Reed Army Medical Center, including the relocation of all tertiary medical services to the Bethesda campus and the renaming of the facility as the Walter Reed National Military Medical Center. The law requires that all services be relocated by 15 September 2011.

For the contractor to complete construction in accordance with BRAC legislation while minimizing impacts on ongoing patient care operations at the Bethesda complex, critical activities, most notably environmental issues, must be completed well in advance to the start of construction, officials said.

The final environmental impact statement is scheduled for release in April. The required comment period under the National Environmental Policy Act ended in January, officials explained, and the official response to public comments will be included in the final economic impact statement.

Officials said the Defense Department is aware of the increased traffic concerns of the surrounding communities, and continues to consider measures to mitigate traffic issues that could arise during the period of construction, and work with local civilian leadership.

Plans call for the new, 345-bed medical center to have the full range of intensive and complex specialty and subspecialty medical services, including specialized facilities for the most seriously war injured. It's expected to become the U.S. military's premier tertiary referral center for casualty and beneficiary care, to provide postgraduate education and other training, and to serve as a critical medical research center.

Concurrent to this project will be the construction of a new 120-bed military medical treatment facility at Fort Belvoir, VA. “This is the next step in building the world-class medical center at the hub of the nation's premier regional healthcare system,” said RADM John M. Mateczun, commander of Joint Task Force Capital Region Medical. “The department intends to meet its obligation to ensure our service members and families receive the highest quality of care. There is nothing more important than taking care of our wounded warriors.”

The new Walter Reed National Military Medical Center complex will include a mix of new outpatient and inpatient facilities as well as extensive renovations and upgrades to the existing hospital facilities. New circulation pathways, utility tunnels, and a parking structure are also included in the plans. Supporting facilities to be built under a separate contract include non-clinical and warrior transition administrative spaces, barracks, gymnasium, and additional parking.

About 2,200 staff positions will be added to the Bethesda campus; most of the new personnel added to the future facility will transfer from other DOD locations, officials said. Additionally, the Fisher House Foundation will build two new Fisher Houses and a National Intrepid Center of Excellence for Traumatic Brain Injury and Psychological Health Diagnosis, Treatment, Clinical Training, and related services to support wounded veterans and their families.✍

—Joint Task Force Capital Region Medical news release, American Forces Press Service.

ORTHOPEDIC RESEARCH LOOKS TO WAR ZONE

When thousands of orthopedic surgeons gathered in San Francisco in March, for their annual meeting, one topic popped up again and again: blast injuries.

On the battlefield, doctors push the limits of orthopedic medicine every time they fight infection, fit an Iraqi soldier with a prosthetic hand, or piece together broken bones using bits of metal.

In the research field, scientists look at the same injuries and try to figure out how to use stem cells to grow new bone, permanently implant a prosthetic foot to a living shin, or spread knowledge about controlling infections.

For civilian surgeons, much of what's new these days in the orthopedic field comes from what U.S. troops face in Iraq and Afghanistan.

With 31,000 wounded—and 60 to 70 percent of those injuries being musculoskeletal—there are, unfortunately, lots of opportunity for new ideas, said CAPT Dana Covey, who has deployed to Iraq twice and is chairman of orthopedic surgery at Naval Medical Center San Diego.

“There's a huge wealth of knowledge,” said MAJ Eric Bluman, chief of foot and ankle service at Madigan Army Medical Center at Fort Lewis, WA, who looked at treating infections in Iraq. “Normally, we see blunt trauma, from car accidents or bike accidents. [Iraq] was almost like a second fellowship for me.”

For example, blast injuries often destroy bone, so military surgeons rebuild it with other materials, such as metal. But researchers are working on ways either to inject stem cells or draw a person's own stem cells to the area that needs them.

Here's why. Stem cells have not yet decided what they want to be when they grow up, so they become whatever's needed to fill the gaps—bone, ligament, blood vessel. But that work translates beyond roadside bombs when it's applied to everyday injuries, such as torn ligaments, said John Huard, director of the Growth and Development Laboratory at Children's Hospital of Pittsburgh.

So far, most of that research has been done only on animals, though 30 patients were treated for incontinence in a clinical trial in Canada.

Scott Boden, of the Emory Spine Center, talked about the possibility of “growing” bone to repair spines. “The idea that we can summon and command stem cells to a specific region is something we’re devoting a lot of research to,” he said.

Most people know about the controversial stem cells—those that come from fetuses. But Boden and Huard said stem cells exist naturally in a person’s muscles and blood vessels, so it may be a matter of either withdrawing those cells and injecting them where they’re needed, or finding a way to attract them with a protein signal to an area in need of repair.

In animal studies, Huard said scientists were able to “regenerate bone that is just as normal as lost bone.”

Scott Rodeo, co-chief of sports medicine and shoulder service at The Hospital for Special Surgery in New York, said similar techniques can be used to repair tendons and ligaments.

That’s important because, in the case of injuries like torn rotator cuffs, there’s a substantial failure rate for tendon-to-bone healing—“a big clinical problem for us,” Rodeo said. Patients often end up with constant pain or significantly weaker than they were before.

Infection is also an issue. Bluman looked at using “vacuum” dressings, or augmented sub-atmospheric wound dressings, to prevent infection in Iraq. He found that they did, in fact, reduce infection as well as helping to remove dead tissue and debris. However, they also saw 37 complications after using the 277 dressings. He said the dressings are effective in treating war wounds, though they need to look at long-term results.

Infection brings cause for concern in the civilian world as well. In 2005, 18,650 people died in the U.S. of staph infections that were resistant to antibiotics.

“It’s an ongoing problem that’s actually getting worse,” said Richard Evans, chief of adult reconstructive surgery at the University of Arkansas for Medical Sciences. “We have new organisms that are smarter than we are.”

Recommendations? Wash your hands a lot. Don’t share towels or razors, even in Iraq where troops share everything. And use that antibacterial gel.

“This is a lethal bacteria, so the antibacterial soaps are a good idea,” Evans said. “We know this can be broken by simply washing your hands.”

The knowledge is great, said COL Mark Richardson, USAF, who served two tours in Balad. But it comes with some pain. He said friends have described anger at not being able to do more for the troops or civilians hurt in the course of the war.

“I felt positive for being able to help,” he said. “But [post-traumatic stress disorder] is significant in hospital personnel. It’s a real phenomenon.”

—Story by Kelly Kennedy, Staff Writer, Army Times.

DOD, VA HIGHLIGHT ADVANCES IN WOUNDED WARRIOR, FAMILY CARE

Two officials from the departments of Defense and Veterans Affairs cited a veritable laundry list of changes in wounded warrior and family care in testimony at the Senate Veterans Affairs Committee last March.

In all, the two departments are in the process of implementing more than 400 recommendations compiled from five major studies of military healthcare over the past few years, according to a joint opening statement submitted by senior officials from both departments.

Dr. Lynda Davis, Deputy Assistant Secretary of the Navy for military personnel, and Kristin Day, chief consultant for case management and social work for the VA, appeared before the committee. Davis is DOD’s lead official for the reform of wounded warrior care, specializing in case management. Davis and Day co-chair the case management reform action group, which collaborates with military family members, government agencies, veteran service organizations, and private groups. “We are pleased to report that, while much work remains to be completed, meaningful progress has been made through improved processes and greater collaboration between the departments of Defense and Veterans Affairs,” the officials said in a statement submitted to the committee.

Central to the changes was the creation of a senior oversight committee staff made up of senior officials from both departments. Among others, it includes all service secretaries and is co-chaired by the deputy secretaries of both departments, according to the statement.

“The [committee] continues work to streamline, de-conflict, and expedite the two department’s efforts to improve support of wounded, ill, and injured service members’ and veterans’ recovery, rehabilitation, and reintegration,” officials stated in the testimony.

At the top of the list has been improving the disability evaluation system, establishing a center of excellence for psychological health and traumatic brain injury, establishing a federal recovery coordination program, and improving data sharing between the DOD and VA. Developing medical facility inspection standards and improved delivery of pay and benefits are also key, the officials said.

Since the beginning of Operation Enduring Freedom in October 2001, the departments have been working to identi-

fy and support a full range of needs for the service members, veterans, and families.

Fundamental to many of the changes is the realization that “the creation of a truly integrated process involves inter-service, interagency, intergovernmental, public, and private collaboration in the development and application of policies, procedures, programs, and professionals that serve and support those we honor,” they said in the joint statement.

The officials cited several initiatives aimed at improving integration of the departments’ services, but they also said a seamless transition is often not “a straight path.” Veterans and service members often move back and forth between DOD and VA facilities.

Specific steps taken include creating a joint VA and DOD federal recovery coordinator program. These coordinators are charged with managing needs of severely injured service members and their families. Eight coordinators were hired in December 2007. They are working at Walter Reed Army Medical Center, Washington, DC; Brooke Army Medical Center, in San Antonio, TX; and the National Naval Medical Center Bethesda, MD. Two more coordinators are planned, one more for Brooke and one for Naval Medical Center San Diego.

In addition, the departments are developing a joint family handbook and website to provide a roadmap with information on benefits and services. “The critical role family members play in the ability of a wounded, ill, or injured service member or veteran not only to heal but thrive has long been recognized by the departments and the military services,” the officials said.

The two departments also are developing a benefits website dubbed “My e-Benefits” that will serve as a single, all-inclusive site for benefits information.

In addition to joint programs, DOD has launched several initiatives aimed at improving care for wounded warriors and their families:

MilitaryHOMEFRONT serves as the official DOD website for reliable quality-of-life information designed to help troops and their families, leaders, and service provider;

The DOD Military Assistance Program provides a website with information and interactive resources for assisting in relocations, money management, and job searches.

The Military Spouse Resource Center is designed to assist spouses by providing easy access to information, resources and opportunities related to education, training, and employment.

The Military Child in Transition and Deployment program serves as the official source of education information for DOD.

The PDHealth.mil website provides information and guidance for service members and their families about sup-

port services available from the military, VA, and the private sector.

The Military Spouse Career Advancement Initiative enables eligible candidates to receive career advancement accounts of \$3,000 for 1 year, and renewable a second year for an additional \$3,000, to pay for expenses related to post secondary education and training.

In addition, the National Guard and reserves were highlighted for their family programs, the officials said. The two leaders said they believe the greatest improvement to long-term care and support of America’s wounded warriors and veterans will come from enacting provisions recommended by the President’s Commission on Care for America’s Returning Wounded Warriors. The nine-member panel co-chaired by Donna Shalala, a former Secretary of Health and Human Services, and former Kansas Senator Bob Dole, was created in March 2007 by President Bush.

“We have, thus, positioned ourselves to implement these provisions and continue our progress in providing world-class support to our warriors and veterans while allowing our two departments to focus on our respective core missions,” the officials said in the joint statement. “Our dedicated, selfless service members, veterans, and their families deserve the very best, and we pledge to give our very best during their recovery, rehabilitation, and return to the society they defend.”

—Story by Fred W. Baker III, American Forces Press Service, Washington, DC.

HEARING LOSS IS EPIDEMIC AMONG COMBAT TROOPS

Soldiers and Marines caught in roadside bombings and firefights in Iraq and Afghanistan are coming home in epidemic numbers with permanent hearing loss and ringing in their ears, prompting the military to redouble its efforts to protect the troops from noise.

Hearing damage is the number 1 disability in the fight against terror, according to the Department of Veterans Affairs (VA), and some experts say the true toll could take decades to become clear. Nearly 70,000 of the more than 1.3 million troops who have served in the two war zones are collecting disability for tinnitus, a potentially debilitating ringing in the ears, and more than 58,000 are on disability for hearing loss, VA said.

One major explanation given is the insurgency’s use of a fearsome weapon the Pentagon did not fully anticipate: powerful roadside bombs. Their blasts cause violent changes in air pressure that can rupture the eardrum and break bones inside the ear.

Also, much of the fighting consists of ambushes, bombings, and firefights, which come suddenly and unexpectedly,

giving soldiers no time to use their military-issued hearing protection.

"They can't say, 'Wait a minute, let me put my earplugs in,'" said CAPT Michael E. Hoffer, MC, one of the country's leading inner-ear specialists. "They are in the fight of their lives."

In addition, some servicemen on patrol refuse to wear earplugs for fear of dulling their senses and missing sounds that can make the difference between life and death, Hoffer and others said. Others were not given earplugs or did not take them along when they were sent into the war zone. And some Marines were not told how to use their specialized earplugs and inserted them incorrectly.

Hearing damage has been a battlefield risk ever since the introduction of explosives and artillery, and the U.S. military recognized it in Iraq and Afghanistan and issued earplugs early on. But the sheer number of injuries and their nature—particularly the high incidence of tinnitus—came as a surprise to military medical specialists and outside experts.

The military has responded over the past 3 years with better and easier-to-use earplugs, greater efforts to educate troops about protecting their hearing, and more testing in the war zone to detect ear injuries.

Considerable damage has already been done. Sixty percent of U.S. personnel exposed to blasts suffer from permanent hearing loss, and 49 percent also suffer from tinnitus, according to military audiology reports. The hearing damage ranges from mild, such as an inability to hear whispers or low pitches, to severe, including total deafness or a constant loud ringing that destroys the ability to concentrate. There is no known cure for tinnitus or hearing loss.

The number of servicemen and servicewomen on disability because of hearing damage is expected to grow 18 percent a year, with payments totaling \$1.1 billion annually by 2011, according to an analysis of VA data by the American Tinnitus Association. Anyone with at least a 10 percent loss in hearing qualifies for disability.

From World War II and well through Vietnam, hearing damage has been a leading disability.

Despite everything that has been learned over the years, U.S. troops are suffering hearing damage at about the same rate as World War II vets, according to VA figures. But World War II and Iraq cannot easily be compared. World War II was a different kind of war, waged to a far greater extent by way of vast artillery barrages, bombing raids, and epic tank battles.

Given today's fearsome weaponry, even the best hearing protection is only partly effective—and only if it is properly used.

Some Marines were issued a \$7.40 pair of double-sided earplugs, with one side designed to protect from weapons fire

and explosions, the other from aircraft and tank noise. But the Marines were not given instructions in how to use the earplugs, and some cut them in half, while others used the wrong sides, making the devices virtually useless, Hoffer said. Today, instructions are handed out with the earplugs.

In any case, hearing protection has its limits. While damage can occur at 80 to 85 decibels—the noise level of a moving tank—the best protection cuts that by only 20 to 25 decibels. That is not enough to protect the ears against an explosion or a firefight, which can range upwards of 183 decibels, said CAPT Ben Balough, MC, chairman of otolaryngology at the Balboa Navy Medical Center, San Diego.

The Navy and Marines have begun buying and distributing state-of-the-art earplugs, known as QuietPro, that contain digital processors that block out damaging sound waves from gunshots and explosions and still allow users to hear everyday noises. They cost about \$600 a pair.

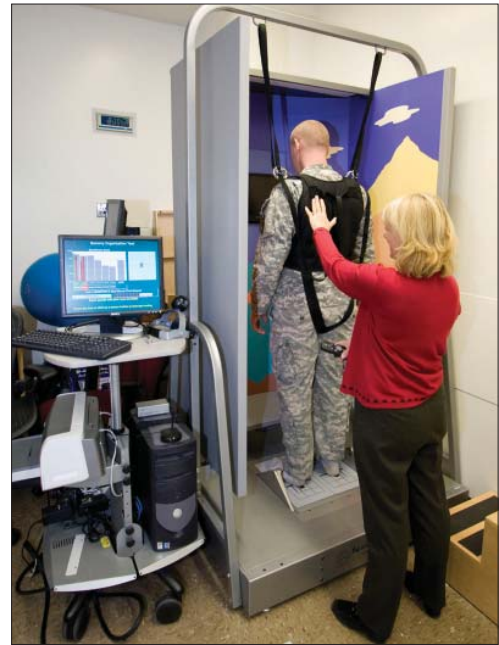
The Army also has equipped every soldier being sent to Iraq and Afghanistan with newly developed one-sided earplugs that cost about \$8.50, and it has begun testing QuietPro with some troops.

In addition, the Navy is working with San Diego-based American BioHealth Group to develop a "hearing pill" that could protect troops' ears. An early study in 2003 on 566 recruits showed a 25 to 27 percent reduction in permanent hearing loss. But further testing is planned.

And for the first time in American warfare, for the past 3 years, hearing specialists or hearing-trained medics have been put on the frontlines instead of just at field hospitals, Hoffer said.

Marines and soldiers are getting hearing tests before going on patrol and when they return to base if they were exposed to bombs or gunfire.

"You have guys that don't want to admit they have a problem," Hoffer said. "But if they can't hear what they need



Dr. Kim Gottshall tests a patient's balance at Naval Medical Center San Diego. Photo by Denis Poroy

to on patrol, they could jeopardize their lives, their buddies' lives and, ultimately, their mission."✂

—By Chelsea J. Carter, *The Associated Press*, posted on *www.tricare.mil* 10 March 2008.

NAVY MEDICINE ENLIGHTENS “SOUTH PACIFIC”

Call it serendipitous, a coincidence, or just good fortune. Fifty-nine years after *South Pacific* opened—and 100 years following the birth of the Navy Nurse Corps—Rodgers and Hammerstein’s masterpiece is back on Broadway. For those too young not to have grown up listening to Mary Martin washing that man right out of her hair, a younger generation is in for an “enchanted evening.” Kelli O’Hara, cast in the role of Navy nurse, ENS Nellie Forbush, stars opposite Paulo Szot, a French planter, Emile de Becque, in this revival at Lincoln Center’s Vivian Beaumont Theater. The brilliant production is everything one would expect from a Broadway show—a set that includes the fuselage of a World War II fighter and two period GI trucks, timeless music, superlative choreography, and first-rate acting from the principals and entire supporting cast.

Based on James Michener’s Pulitzer Prize-winning *Tales of the South Pacific*, the locale is Espiritu Santo, a Navy base supporting the American campaign to retake Japanese-held islands in the Pacific. One of the several compelling tales is the love story of Nellie, the spunky young nurse from Little Rock, and Emile, a Frenchman on the run from his past, set among fun-loving Seabees and a host of Navy nurses.

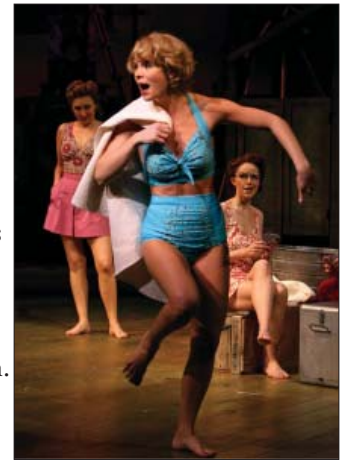
Getting the production accurate was one of director Bartlett Sher’s primary goals. While the show was in rehearsal, Sher invited historians from the Naval Historical Center; the Intrepid Sea, Air & Space Museum, and the Bureau of Medicine and Surgery to New York to brief cast and crew on what Navy life was like on a sweltering South Pacific island base. To these young actors, mostly in their 20s and 30s, World War II was their grandparents’ war. And with none of the performers hav-



Danny Burstein (center) and company in a scene from the Lincoln Center Theater production of Rodgers & Hammerstein’s *South Pacific*. Photo by Joan Marcus

superiors, and the proper way for Navy nurses to address everyone else.

The cast members learned their lessons well. When the new *South Pacific* opened on 3 April, reviewers and old-timers who had seen the original, which ran on Broadway from 1949 to 1954, universally lauded this rousing production. As a result, the show, at first scheduled for a limited run, is now open-ended.—JKH✂



Kelli O’Hara, who plays Nellie Forbush, performs a song and dance routine. Photo by Joan Marcus

NAVY CORPSMEN WITH SPECIAL OPS SAVE LIVES IN COMBAT ZONE

On the battlefield or on the firebase, corpsmen routinely care for and treat Afghans with medical emergencies. Serving in the Marine Corps for almost 20 years taught me to appreciate the role of corpsmen with Marine units, but before my recent time with them, I never realized how critical they are in a combat zone. When medical doctors are not available, it is often the corpsmen in Helmand Province, Afghanistan, who treat victims with life-threatening injuries.

Fleet Marine Force-qualified corpsmen and special operations combat medics in Helmand Province with the Marine Special Operations Company (MSOC) from the 1st Marine Special Operations Battalion at Camp Pendleton have conducted amputations and treated bullet wounds, burns, and even dental emergencies.



A corpsman treats a bullet entrance wound on an Afghan National Policeman’s (ANP) leg. Coalition medics treated the wounded ANP at a forward operating base in southern Afghanistan. The bleeding was stopped before the ANP was transported to an Afghan hospital. Photo by Marine SSGT Luis P. Valdespino

There is a difference between the “regular” corpsmen and the Navy Special Operations Combat Medics (SOCM). All SOCMs are FMF corpsmen, but not all FMF

corpsmen are SOCMs.

All corpsmen with the Medical Support Operations Center (MSOC) are enlisted sailors who fight side-by-side with the Marines in special operations missions, but their primary mission is to save lives on the battlefield. In some respects they may as well be Marines.

The corpsmen assigned to the MSOC demonstrated a desire to share in the Marines' lifestyle long before arriving in Afghanistan. A corpsman who wants to be assigned to special operations have to pass through Basic Marine Reconnaissance School with Marines.

But to be certified as SOCMs, corpsmen also attend a number of other rigorous military schools. These include U.S. Army Jump School; Survival, Evasion, Resistance and Escape School; Marine Combatant Dive School; and the Amphibious Reconnaissance Corpsman School, where they learn to treat neurological issues related to diving trauma. Finally, they attend a 7-month Special Operations Combat Medic School at Fort Bragg, NC. While at the SOCM school, medics work with civilian hospital emergency rooms and with paramedics.

If you fail one school, you are out of the program. But those who successfully complete all courses and schools earn the SOCM title. And all special operations require the support of certified SOCMs for their missions.

The training and skills they learn earn them the respect of every Marine. Watching corpsmen in action at a makeshift firebase clinic treat an Afghan policeman with a gunshot wound was eye-opening. There was no hesitation. He treated the entrance and exit wounds, stopped the bleeding, and stabilized the patient until he could be transported to a hospital.

"We have the best corpsmen," said an MSOC who often sees Navy corpsmen in action.✍

—Story by SSGT Luis P. Valdespino Jr., Helmand Province, Afghanistan.



Corpsman treats a wounded Afghan in a Helmand Province village. Marines and sailors were visiting the southern Afghanistan village when they were attacked by Taliban fighters. Photo by Marine SSGT Luis P. Valdespino

CRITICAL CARE SKILL IN FALLUJAH BRINGS NHB NURSE RECOGNITION

LCDR Lisa Saar, of Naval Hospital Bremerton, has been nominated as the top candidate of Navy Nurse Corps, Bureau of Medicine and Surgery, for the Major Maria Ortiz, Operational Nursing Award, which recognizes the exceptional service of combat medical personnel. She has also been selected to be included in the upcoming Women in the Military poster for the Women in Military Service Memorial (WIMSA) to highlight the Navy Nurse Corps' 100th birthday 13 May.

From August 2006 to March 2007, Saar had precious little time to ponder the notion that the Navy Nurse Corps was established in 1908.

During that time, she was serving as critical care nurse at Fallujah Surgical, with the Combat Logistics Regiment 15 (Forward), 1st Marine Logistics Group (Forward), I Marine Expeditionary Force (Forward). Saar's assignment had her plying her skills from trauma bay to flight line and anywhere else she was needed.

"The team of doctors, nurses, and corpsmen we had at Camp Fallujah were just doing what we're trained to do," said Saar. "Our forward surgical team was truly Navy medicine at its finest."

Saar found herself in the volatile area of Fallujah, Al Anbar Province, Iraq, still smoldering from fierce 2004 fighting. It has been called the heaviest urban combat involving American service members since the Battle of Hue City, Vietnam, in 1968. It took Saar only 4 days to realize that Fallujah, located approximately 43 miles west of Baghdad and once home to over 200 mosques with some dating back to Babylonian times, was the locale of a much needed surgical site with trauma unit. That day, 26 injured were brought in during a mass casualty event where her nursing skills and professionalism helped save the lives of numerous patients. The operational tempo rarely let up.

"We were not right on the frontline, but close enough," related Saar. "The majority of the wounded we dealt with were transported to us by vehicle. We'd get victims burnt, blown up, and bloodied. Most of those we treated were due to IED (improvised explosive device) blasts and sniper shots. We treated our Marines and Army personnel, and a lot of Iraqis also. The locals knew that if they got treated by us, they stood a much better chance of recovery."

Gunfire sounded close and nightly mortar rounds were commonplace at times. Shifts scheduled for 12 hours often lingered well past the original schedule. "If we got 3 or 4 hours of shut-eye, we were good to go," said Saar. "Our berthing was right next to the trauma bay. I basically lived in trauma for days at a time. It's what we did. None of us thought to do anything different. It was where we were



LCDR Lisa Saar, deployed with Fallujah Surgical, Combat Logistics Regiment (Forward), 1st Marine Logistics Group (Forward), I Marine Expeditionary Force (Forward). Photo courtesy of LCDR Saar

needed. Being there was our purpose. It wasn't nearly as big a sacrifice as those we were treating to keep alive."


Saar also flew in over 20 Medical Evacuation (MEDEVAC) flights, mainly in Army Blackhawk helicopters taking patients on to further care at Balad Air Base or the main military hospital in Baghdad. And if a Blackhawk MEDEVAC wasn't available, special circumstances required immediate resourcefulness. "We had a critically injured patient that we needed to get to Balad immediately," Saar recalled. "We ended up taking a Special Operations helo and although the flight was only about 30 minutes, it was nasty. We had tracers, RPGs (rocket propelled grenades) coming at us."

Despite the long hours, rustic environment, and rudimentary conditions, the one constant about Saar during her deployment was a ready smile and willingness to help when needed, even beyond medical concerns and physical issues, but also emotional ones.

"Our recovery room and intensive care unit (ICU) needed a few touches of home," noted Saar. "We hung some American flags up and added other stuff we brought with us. Every thing helped."

Saar also got hold of a list of everyone's birthday and organized a get-together every month to celebrate the event. "It gave us a few hours of down time," she related. "We all knew we were far away from home, but it really didn't matter. We were here with our Navy and Marine Corps family. The best Thanksgiving dinner I ever had was there. It was simple, just turkey and mashed potatoes and gravy in takeout plastic containers, in the Marine Ward with the 124th (battalion regiment unit), next to the trauma bay. We all told stories about what our folks back home would be doing. But we were where we needed to be, and that was to care for our wounded."

Lisa Saar has a lifetime of memories from helping to save lives at Fallujah Surgical, but she doesn't consider herself to be a poster child for Navy Nurse Corps.

"I'm very humbled by this recognition," she said. "I was not the only one out there. What I did is exactly what all of us do. We have so many worthy nurses and providing critical care is just not something done alone. It takes a team and I was just a part." 

—Story by Douglas H. Stutz, Naval Hospital Bremerton Public Affairs.

USNS *MERCY* To Deploy On Pacific Partnership 2008

The Military Sealift Command's (MTF) hospital ship USNS *Mercy* (T-AH 19) deployed from San Diego on 1 May, kicking off Pacific Partnership 2008. A humanitarian mission to the Western Pacific and Southeast Asia.



The humanitarian civic assistance (HCA) mission, Pacific Partnership brings together host nation medical personnel, partner nation military medical and construction personnel, and non-governmental organizations (NGOs) to provide medical, dental, construction, and other services HCA ashore and afloat in Southeast Asia and Oceania.

The 4-month deployment will strengthen the goodwill developed during previous HCA missions, such as the 2004 tsunami relief efforts, *Mercy's* 2006 deployment and last year's USS *Peleliu* (LHA-5) Pacific Partnership.


Throughout the 2008 Pacific Partnership mission, *Mercy* will serve as an enabling platform through which military and NGOs can coordinate and carry out HCA efforts.

Many non-governmental organizations are participating throughout the Pacific Partnership 2008 mission, including Aloha Medical Mission, Project Hope, Operation Smile, The University of California San Diego Pre-Dental Society, International Relief Teams, USAID, and others already operating, and working solely within, the countries *Mercy* will visit. Partner nations participating in the mission include Australia, Canada, Chile, Japan, the Republic of Korea, and New Zealand.

Host nations that *Mercy* will visit are Republic of the Philippines, Vietnam, the Federated States of Micronesia, Timor-Leste, and Papua New Guinea.

For this deployment, *Mercy* is being configured with special medical equipment and a robust medical team. *Mercy's* crew includes personnel from public health/preventive medicine; U.S. Navy, U.S. Army, and U.S. Air Force medicine; U.S. Public Health Service; Military Sealift Command; and the U.S. Navy Seabees (construction battalions). For this deployment, *Mercy* is being configured with special medi-

cal equipment and a robust medical team of uniformed and civilian healthcare providers to provide a range of services ashore as well as on board the ship.

The Pacific Partnership humanitarian mission is commanded by CAPT W. A. Kearns III, Ccommander, Destroyer Squadron Thirty One. The Ship's master is civil service CAPT Robert T. Wiley. The commanding officer of USNS *Mercy* Military Treatment Facility (MTF) is CAPT. James P. Rice. 

—U.S. Third Fleet Public Affairs.


USS *Boxer* TO DEPLOY TO LATIN AMERICA FOR CONTINUING PROMISE 2008

USS *Boxer* (LHD-4), along with various embarked units and non-governmental organizations (NGO), departed Naval Base San Diego 28 April en route to Latin America for the Pacific Phase of Continuing Promise (CP) 2008.



CP 2008 is a U.S. Southern Command (SOUTHCOM) operation carried out under the operational control of U.S. Naval Forces Southern Command (NAVSOC), SOUTHCOM's naval component command. The purpose of the deployment is to conduct civil-military operations including humanitarian assistance, civic assistance, and disaster relief with partner nations and to demonstrate the US's continued commitment to Central and South America. "We are partnering with our neighbors to provide construction capabilities ashore, basic primary healthcare, dentistry, environmental healthcare, optometry, biomedical repair, training, and even veterinary care," said CAPT Peter K. Dallman, CP 2008 Pacific Phase mission commander and Commander of PHIBRON 5.

Specific locations for the ship's relief operations include Guatemala, El Salvador, and Peru. The deployment is scheduled to last through June. The deployment is modeled in part on last year's USNS *Comfort* (T-AH 20) deployment to the region that delivered substantial medical and dental support to a large number of people in remote locations.

Embarked units and organizations aboard *Boxer* for CP 2008 include PHIBRON 5, Fleet Surgical Team (FST) 5, Construction Battalion Maintenance Unit (CBMU) 303, Naval Mobile Construction Battalion (NMCB) 5, Helicopter Mine Countermeasure Squadron (HM) 14, Helicopter Marine Medium Squadron (HMM) 764, Tactical Control Squadron (TACRON) 11, Helicopter Sea Combat Support Squadron 23, Assault Craft Unit 1, Beach Master Unit 1, and NGOs such as Project Hope, Project Handclasp, and the Foundation for the Advancement of Children's Esthetics (FACE). 

—U.S. Third Fleet Public Affairs.

LEJEUNE HOSPITAL RE-OPENS RENOVATED MULTI-SERVICE WARD


A ribbon-cutting ceremony in March marked the re-opening of the renovated half a million dollar Multi-Service Ward on the third floor of the Naval Hospital Camp Lejeune.

"We view this construction project as an upgrade to our facility and as an opportunity to enhance the overall care we provide to the nation's war fighters as well as beneficiaries," said CAPT Mark C. Olesen, commanding officer. "It will add to the patients overall comfort and create a more spacious quiet environment for the visitor's waiting room."

For the hospital staff, this was a special day and a testimony to the staff's flexibility. Patient care was not disrupted as the hospital staff worked hard on other wards designated to provide a wide range of inpatient and surgical services to active duty, retirees and family members during the 6-month wait to return to the ward at the conclusion of the construction project.

The renovated 18-bed Multi-Service Ward featured improvements to the ward by the installation of new flooring, light fixtures, and cabinetry. The rooms were freshly painted, new wall paper was added, and new privacy curtains were installed. The bathrooms were tiled and helped add to the overall appearance of the "like-new" ward.

RDML Matthew L. Nathan, Commander Navy Medicine East, Naval Medical Command Portsmouth, VA, was present for the event and noted the positive impact the renovated ward will have on the overall mission of the hospital.

The ceremony was attended by a number of military officials including MGEN John Allen, deputy Commanding General, II MEF, MGEN Ray Smith, USMC (Ret.), COL John Fitzgerald, Chief of Staff, Marine Corps Installations East, COL Richard Flatau, Commanding Officer, Marine Corps Base, Camp Lejeune, NC. 

—Story by Raymond Applewhite, Naval Hospital Camp Lejeune Public Affairs.

(L to R) COL Richard Flatau, CO, Marine Corps Base, Camp Lejeune, NC, RDML Matthew Nathan, Commander Navy Medicine East, Naval Medical Command Portsmouth, VA. CAPT Mark C. Olesen, CO, Naval Hospital Camp Lejeune, cut the ribbon to the Multi-Service Ward. Photo by HM2 Thomas Bush, USN





ADM Mike Mullen, Chairman of the Joint Chiefs of Staff, and retired RADM S. Frank Gallo, national executive director, Armed Services YMCA, present the Angels of the Battlefield Award to HN Elvis H. Gichini during a gala dinner in honor of military medics and corpsmen in Washington, DC. Photo by HM1 Chad J. McNeeley, USN



Actor Gary Sinise shakes hands with Army SPC Joseph Gracia after autographing a photo for him while visiting Naval Medical Center San Diego. Sinise was at NMCS D to sign autographs and meet with patients, while boosting morale for patients and staff members. Photo by MC2 Greg Mitchell, USN



BUC(SCW) Charles Carter (left), ENS Leonard Neal, Carolyn Woods, and CAPT Raquel Bono cut the ribbon on the TCCC Confidence Course. The course is dedicated to HM3 Julian Woods who was killed in November 2004 during the battle for Fallujah. Photo by HN Jermaine Derrick, USN



Medical officers from Algerian, Moroccan, Tunisian, and Greek navies participate in medical evacuation procedures, along with the medical department aboard amphibious assault ship USS Nassau (LHA-4) during Phoenix Express (PE) 2008. Exercises like PE-08 enable participants to advance information sharing which is crucial to maintaining a region free from transnational threats, as well as enhance capability to conduct multinational peacekeeping missions. Photo by MCSN Jonathan Pankau, USN



LCDR Doran Kelvington, Naval Hospital Pensacola chaplain, performs a "Blessing of the Quilts" on a dozen pieces of "quilted purple hearts" from Gulf Coast quilters to veterans of Operations Iraqi and Enduring Freedom. Photo by MC1(AW) Russ Tafuri, USN



LCDR James Fountain, the anesthetist aboard USS *Theodore Roosevelt* (CVN-71), wraps an ulnar gutter splint around the fractured arm of Aviation Ordnanceman James Whalen. Photo by MCSN John Suits, USN



LT Leah Ocampo, a Navy dentist assigned to the 11th Marine Expeditionary Unit (MEU), prepares to numb the mouth of a patient for a tooth extraction during a Medical Civil Action Project (MEDCAP) in the village of Goubetto, Djibouti. Photo by TSGT Jeremy T. Lock, USAF



HM2 Ronald D. Santos, assigned to Foxtrot Co., 2nd Battalion, 3rd Marine Regiment, helps resident while conducting a foot patrol near Jebadin, Iraq. Photo by LCPL Stuart C. Wegenka, USMC



CAPT Kenneth Sample and his daughter, LT April Matiasek, both surgeons assigned to the medical department aboard carrier USS *Harry S. Truman* (CVN-75), perform hernia surgery. Photo by MC3 Ann Marie Lazarek, USN

Holy Cross Sisters

Forerunners of the Navy Nurse Corps

Sr. Mary Denis Maher, CSA, Ph.D.

For professional achievement and superior performance of duties while serving on board the hospital ship, *Red Rover*,...the Sisters of the Congregation of the Holy Cross displayed superior leadership and selfless dedication while rendering nursing care to soldiers during the Civil War,” notes the 1991 letter of appreciation from the United States Navy on the 150th anniversary of the Holy Cross Sisters in the U.S. The letter acknowledges the Sisters, “who significantly impacted the quality of patient care on board the *Red Rover*,” as “the forerunners of today’s Navy Nurse Corps.” But even before serving

on *Red Rover*, the Holy Cross Sisters, headquartered at St. Mary’s, IN, had responded to a request in October 1861 for Sisters to serve at a military hospital in Paducah, KY. Though the community, who had come from France to the wilderness of Indiana in 1843 at the request of Notre Dame University founder, Rev. Edward Sorin (1814-1893), to open schools, were not nurses, Mother Angela Gillespie (1824-1887) immediately agreed. Within hours, six sisters of the twelve requested were on their way to the military hospital. A month later, a second group of sisters with Mother Angela herself went to Naval Hospital

Mound City, a converted warehouse in Illinois near the confluence of the Ohio and Mississippi Rivers, where they remained until 1865. By the end of the Civil War, at least 65 of the 160 Holy Cross Sisters had served in a number of military hospitals in Illinois, Tennessee, Washington, DC, and St. Louis, MO.

Surgeon John Brinton (1832-1907), whose attitude toward most female lay nurses was direct and negative because of their “inexperienced and troublesome presence,” decided to replace female lay nurses in the Mound City Hospital with the Sisters of the Holy Cross during his short tenure. He believed they would be better nurses for his sick men. These men, he reported in his memoirs, not only improved under the sisters’ care, but they grew to love and respect the sisters.

The devotion of the Sisters was noted by MGEN Lew Wallace’s wife, who described the 30 sisters who came to Mound City Hospital as “a flock of white doves—to nurse in the hospitals, where the stillness is like the silence of death.” She praised them because “they live among the patients without thought of deserting infected places or avoiding contagion by flight.”

By June 1862, Mother Angela also offered the services of the sisters for a “hospital boat” which was *Red Rover*. Originally build in 1859 at



Images courtesy of Naval Historical Center

Illustration by Theodore R. Davis, published in *Harper's Weekly*, 9 May 1863, depicting a scene aboard USS *Red Rover*.

Cape Girardeau, MO, for commercial use, *Red Rover*, originally a 625-ton side wheel river steamer, was first a commercial vessel, then a Confederate barracks ship (1861-62) until captured by Union forces at Island No. 10 in April 1862. Repaired a few months later, *Red Rover* then became a hospital ship for the U.S. Army's Western Gunboat Flotilla. Soon, the Navy purchased the boat for its first hospital ship and made some additional repairs to support its crew and 200 patients. *Red Rover* was commissioned in December 1862 as a hospital ship for the Mississippi Squadron until November 1865 when she was decommissioned and sold. From December 1864 to November 1865, the *Red Rover* was stationed at Mound City, IL. The men were often taken from the ship and transferred to the Mound City Hospital, which often cared for more than 1,000 men.

At least two sisters served from June until September, 1862 while *Red Rover* was an Army ship. Once *Red Rover* was a Navy vessel, two more sisters joined the group on Christmas Eve, 1862. Although the Army listed them as "nurses," a job function rather than rank, the Navy listed them as "Sisters of Charity," but did list five African American women as "nurse." These five, in recent years, have been acknowledged as the first Navy nurses by rank. However, during the Civil War, any Sister nurses were often all



Line engraving published in *Harper's Weekly*, 9 May 1863, depicting scenes on board USS *Red Rover* during the Civil War. The left pane, "The Sister," shows a Holy Cross nurse attending to a patient. The panel on the right shows a convalescent ward aboard the ship.

called "Sisters of Charity" or "Sisters of Mercy" regardless of the specific name of their community.

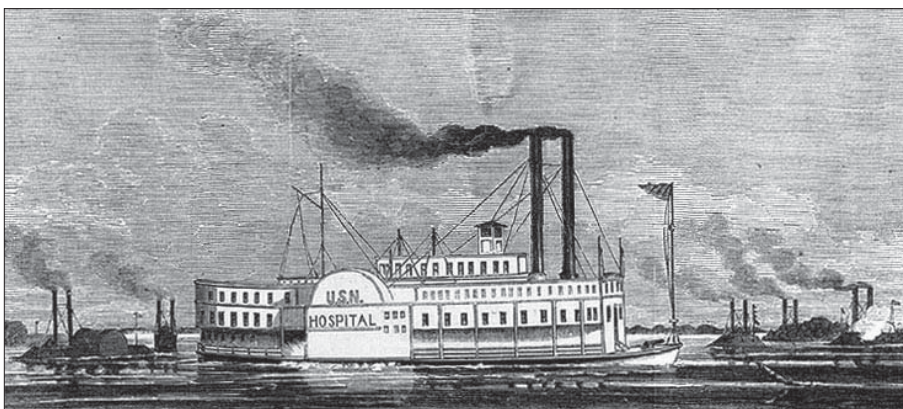
Yet, as Dr. Brinton pointed out, the Holy Cross Sisters learned quickly. Nursing in the Civil War included giving medicines, dressing wounds, assisting surgeons, feeding patients, keeping the patients clean, writing letters, and sometimes keeping order in the wards. In an era where there was little knowledge of how infectious diseases were spread, these seemingly insignificant tasks of the sisters and others were often critical.

The Holy Cross Sisters who served on *Red Rover*, when it was a Navy ship received 50 cents a day, 10 cents more than the Army nurses, though actual total of monies earned cannot be determined. Even if records had been

kept, the frequency of payment may have been erratic. For example, Mother Angela noted on 1 January 1862, in the fragment of what appears to be the Mound City Hospital account book, "The paymaster is generally very tardy, leaving an interval of several months between his appearances."

The Holy Cross Sisters were not alone in religious communities serving in the Civil War. By the time the war ended, over 600 sisters belonging to 21 orders from 12 separate congregations had served as nurses in Navy and Army hospitals, transport ships, field (tent) hospitals, makeshift shelters, and on battlefields both North and South.

For the Holy Cross Sisters, this wartime nursing experience led to the beginning of their healthcare ministry, including hospitals and schools of nursing, which continues today—a legacy from these forerunners of the Navy Nurse Corps.✍



The naval hospital ship *Red Rover*

Sr. Mary Denis Maher, CSA, Ph.D., is a certified archivist with the Sisters of Charity of St. Augustine. She is the author of *To Bind Up the Wounds: Catholic Sister Nurses in the U.S. Civil War* (1989).

This article originally appeared in the Jan-Feb 2008 edition of *The Grog Ration*, <http://navyhistory.med.navy.mil>

Standing By, Ready to Serve

The Case for Forensic Nurses in Uniform

LT Michelle Ortiz, NC, USN

In many respects, forensic nursing is a new concept, but in reality, it is as old as the nursing profession itself. According to Stevens, all nurses function as forensic scientists daily in their profession because everything a nurse documents can be used as evidence in a court of law.(1) Anytime a patient injury becomes the basis for a criminal action or lawsuit, a nurse's forensic skills are put under scrutiny. Scrupulous documentation provides protection for the nurse, evidence for a client, and testimony for the court.(2) Many nurses are practicing forensic nursing and do not realize it.(3)

Virginia Lynch is credited as the pioneer and founder of forensic nursing as a modern day scientific discipline. Lynch defines forensic nursing as "the application of the nursing process to public or legal proceedings, and the application of forensic healthcare in the scientific investigation of trauma and/or death related to abuse, violence, criminal activity, liability, and accidents."(4) Forensic nursing was initially recognized in 1991 during the 43rd Annual Meeting of the American Academy of Forensic Science (AAFS). In 1992, 70 nurses from 31 various Sexual Assault Nurse Examiner (SANE) programs throughout the U.S. and Canada met in Minneapolis, MN, to create the International Association of Forensic Nurses (IAFN). This diverse group of professionals created a fellowship and formed a kinship in the field of nursing that had previously been largely unacknowledged and unsupported by its peers.(5) In 1995 the American Nurses Association formally recognized forensic nursing as a specialty. This recognition gave it "legitimacy" as a part of the profession and laid the foundation for forensic nursing to mature as an art and a science.

Since that first meeting of the IAFN in 1992, the organization's membership has increased and its scope of practice has been established. In addition to SANE nurses, the group now counts among its ranks various disciplines of the forensic sciences: death investigators, child abuse experts, domestic violence specialists, researchers, educators, and legal nurse consultants, among others. By January 2007, the organization had 2,532 members. Nine hundred fifty-two forensic specialists have taken and passed

the SANE-Adult certification exam since its first offering in 2002 (personal communication with Kim Day, 8 January 2007). In addition to its newsletter *On The Edge*, the IAFN organization launched the *Journal of Forensic Nursing*, a peer reviewed journal in 2005.

The validity of IAFN was validated on 11 January 2002, in the case of *Eduardo v. Velazquez v. Commonwealth of Virginia*. It is on this date that the Supreme Court of the State of Virginia issued an opinion that solidified the legitimacy of forensic nurses testifying as expert witnesses and offering opinion testimony. This landmark case pushed forensic nursing to the next plateau of acceptance and gave the specialty further autonomy in the medico-legal arena.(6)

Forensic nurses can be utilized in every area of health-care, and many are already employed in various areas such as law, education, and investigation. Clinical practice focuses on geriatrics, pediatrics, psychiatry, and women's health. Additionally, there is room for development in clinical investigation, risk management, disaster response, insurance fraud, and correctional institutions. Since 2006, forensic nursing has been recognized as a practice area in over 27 countries worldwide.(7) It is important to note all the potential roles and/or tasks of the professional forensic nurse include, but are not limited to:

- Sexual assault nurse examiner – pediatric, adolescent, and adult populations
- Death investigator/coroner/morgue technician/medical examiner assistant
- Legal nurse consultant/clinical investigator
- Domestic violence specialist
- Child abuse/neglect specialist
- Elder abuse specialist
- Correctional facility nurse
- Education/research/consulting/epidemiology

The Military Connection

Some U.S. military nurses hold memberships in IAFN; however, the exact numbers are not known because registrants are not specifically asked whether or not they have a military affiliation when they apply for IAFN membership.

However, as recently as 2005, an active duty Navy nurse was nominated as a candidate for the presidency of IAFN. There are military nurses from all branches of service who hold forensic degrees and certificates, and who make forensic contributions and referrals daily. Most are not employed in a forensic nursing billet or capacity, but instead are utilized on an “as needed” basis. It is not unheard of for military nurses who are being deployed to an austere or isolated setting to be sent to a 40-hour SANE didactic course, followed by an abbreviated clinical component, with the expectation that they are now responsible for all sexual assault exams that need to be performed “in the field.” The sexual assault exam, which typically encompasses a full head-to-toe examination coupled with pelvic and potentially ano-rectal inspection is sensitive and complicated, and requires the examiner to be well prepared and well educated both in forensic theory and practice.

Although any registered nurse can perform the exam according to the directions supplied in the evidence collection kit, if they are not credentialed as a SANE or advanced practice nurse, then the exam must legally be precepted and/or co-signed by a credentialed provider. This creates the additional expense of unnecessary personnel. Also, consider the caliber of evidence and testimony of an expertly trained SANE nurse compared to a nurse who has never been formally trained or precepted. SANEs ideally are clinically precepted by an expert SANE in order to collect evidence and document the case properly. This would result in no additional cost if the SANE and the preceptor were military nurses. More importantly, SANEs ensure far superior evidence collection processes especially in difficult and complicated cases, and better prosecution rates of offenders.

Intuition is as important as education and clinical competency acquired by such training. Winfrey and Smith state that the expert nurse must learn to trust his or her intuition. Intuition is not learned in a textbook or from a didactic course, but is gained and reinforced with experience.⁽⁸⁾ Competence in all forensic areas involves clinical exposure, literature review, seminar attendance, and membership in a professional organization such as IAFN 2. A SANE must also be an effective communicator in the courtroom, a setting in which most military nurses do not have extensive experience.

Paradigm Shift

Military nurses with an interest in forensic science must challenge the DOD to expand its paradigm of nursing to include forensic practice. The first step is to organize by creating a member section within IAFN solely for military nurses. This forum would provide an electronic “meeting place” for military nurses with forensic interests and education to collaborate. This could easily be accomplished

through a bulletin in IAFN’s official newsletter *On The Edge* and its sister publication, *Journal of Forensic Nursing*, and by adding a link on IAFN’s official website. Once assembled, this group of nurses could highlight their current primary areas of practice, and create forums to discuss their forensic practice specialty. Networking with one’s peers is enhanced by knowing who has shared interests within the group. The ability to partner and mentor each other is as valuable in the military setting as it is in the civilian sector. Clements, Mugavin, and Capitano reflect that mentoring shouldn’t be left to circumstance, but rather be purposeful, dynamic, and collaborative.⁽⁹⁾ It is a relationship that cannot be fostered and nurtured in isolation.

Once organized, the next step is to establish credibility through credentials. All eligible military members of IAFN should seek and establish certification in a forensic specialty area such as SANE, Legal Nurse Consultant, or Forensic Nurse Examiner. In addition to establishing credibility through credentialing and continuing education pursuits, it is equally imperative to establish active membership with one or more professional organizations that seek to further the science of forensics, such as IAFN or the American Academy of Forensic Science. Professional memberships offer a network of elite practitioners upon whom to call for consultation and guidance. Additionally, they offer online education and training resources, as well as annual conventions for practitioners to keep abreast of the latest technology and modalities.

With a communication network created, credentials in place, and professional memberships established, it then becomes a matter of educating one’s peers and superiors to demonstrate how the military forensic nurse can be utilized in ways that are not only germane to the civilian sector, but also meet the distinctive demands of the military setting. Although military forensic nursing is very much a “mirror” of its civilian counterpart, there are features unique to military nursing as a whole and to each branch of service.

Military families have always faced a number of challenges that make them especially vulnerable to high levels of stress: financial burdens among junior enlisted personnel, long family separations, frequent moves, and isolation from traditional support systems. ^(10,11) Additionally, there is renewed interest in the issues surrounding post traumatic stress disorder (PTSD) and the effects of traumatic brain injury (TBI) and the military veteran. The stress may be as real and difficult for the family members left at home as it is for the member leaving home. Issues of domestic violence among military families are complex and often cross jurisdictional lines. Victims of domestic violence are hesitant to report the abuse because they fear the impact it could have on their spouse’s career.⁽¹²⁾ The military is not immune to domestic violence, child abuse,

shaken baby syndrome, rape, or violence in any form. The global war on terror has been a test of our nation's resources, military manpower, and public patience. We can assume that stress levels in our military members will increase as well, and the inadequate coping responses of some could exponentially increase the forensic cases involving the military.

In 1981, DOD directive 6400.1 required all branches of the military to establish a Family Advocacy Program to address child and spouse abuse issues and set out to create a central registry to track the data received. Twenty years later, in March 2001, the Secretary of Defense appointed 24 civilian and military members to the new Defense Task Force on Domestic Violence. This committee was charged with "formulating a long-term, strategic plan to assist the Department of Defense in eliminating domestic violence within the department." The committee released its final report in March 2003, which contained approximately 200 detailed recommendations on how the DOD could improve its response to domestic violence, and ultimately set forth measures for prevention. The interest from DOD in issues of domestic violence is apparent, and the infusing of forensic nurses into this initiative could be the catalyst to propel the DOD recommendations toward success.

Potential Benefits

The most important and likely most influential way to further military forensic nursing with the DOD is to show the potential benefits for the military healthcare system and consequently the government. Most of the forensic evaluations and examinations required by DOD beneficiaries stateside are contracted to civilian agencies, but consider the global commitment of today's military. Every ship, squadron, platoon, brigade, unit, and base—whether stateside or overseas—deserves to have a forensic professional assigned. By cultivating and maintaining a steady cadre of active duty forensic nurses, the military could utilize these professionals to perform forensic duties as needed to serve their patient population. By recognizing forensic nurses as a sub-specialty and creating forensic "teams" of medical professionals, the government could better utilize appropriate manpower to respond to global events. Sekula states that "within the healthcare setting, the forensic nurse enhances patient care management, resulting in improved clinical services, legal order, and well-documented forensic protocols."⁽¹³⁾ By demonstrating the potential of forensic nursing, and how it can directly contribute to the mission of the military, the DOD stands to ensure a standard of care for personnel, even when deployed overseas or in unconventional settings. In a world with skyrocketing costs for healthcare, ⁽¹⁴⁾ veterans aging at an increased pace, ⁽¹⁵⁾ and the escalating costs of the war on terror 16 military nursing is poised in the unique position to

carve out new applications of forensic science parallel to the more conventional territory of its civilian counterpart.

Global Access to Care

Military members stationed overseas or in remote environments are no less likely to be victimized, nor are they any less deserving of access to the same quality and effective standard of care they would have in the U.S. civilian agencies, often employed or contracted by the government to provide forensic services for the military stateside, cannot compete with this mobility and access to care. In addition, forensic teams mobilized to collect and preserve human remains as well as treat the wounded and survivors of terror and disaster events would significantly augment the mission of ships sent to disaster regions. Guaranteeing military members access to competent effective forensic care under any circumstances and in any location is paramount. The Joint Commission has mandated that all patients who present to the healthcare system for urgent, emergent or routine medical care must be screened for domestic violence and personal safety. This mandate must be equally extended to our fighting forces abroad. A forensic nurse is exceptionally qualified to meet that mandate and ensure access to forensic care, education, referral, and follow-up.

If one subscribes to Birk's assertion that forensic nurses practice "anywhere the worlds of law and medicine collide," one must also assume that these worlds also collide in the armed forces.⁽¹⁷⁾ The U.S. military prides itself in providing the same standard of care to military members, whether at home or overseas. That standard of care should be equally guaranteed in matters of forensic interest. Military nurses specializing in forensics can assure a level of expertise that upholds that standard anywhere in the world.

Chain of Command

Organizing a clear command structure for the military forensic nurse's community is very important in justifying "billets" or available job openings. Therefore, by establishing a subdivision of military medicine devoted to the forensic needs of the DOD, the military can justify the creation of those jobs and begin the process of organizing its forensic experts. Ideally, each regional medical forensic pathologist would have one or two forensic nurses assigned to their office. These nurses could work with the pathologist on all cases of forensic interest, and would be directly involved with each command in their region to promote, educate, mentor, and when needed, assist, an on-site forensic specialist on matters of forensic interest.

LCDR Cynthia Ferguson, an active duty certified nurse midwife and forensic nurse examiner stationed at the National Naval Medical Center, Bethesda, MD, has taught military members about subjects of forensic interest for

several years. She teaches content related to workplace violence, domestic violence, and sexual assault to a variety of audiences. Additionally, she formulated a potential command and organizational structure that could be instituted to place forensic nurses in practice on active duty. With the development of the DOD Office of Clinical Forensics, forensic nurse examiners could be put in the vital position of helping to develop evidence-based practice guidelines based on organized and purposeful research initiatives where medical policy, procedures, and standards relate to forensic evidence collection. Her vision for Navy forensic practitioners working together in a network that allows for more streamlined avenues to information, education, training and professional partnership is being drafted for proposal to military medicine at this writing.

It is under these proposed offices that forensic nurses can specialize in and further the practice of forensics with military applications. There is "something for everyone" in forensic nursing. Every specialty is represented and every forensic interest is available. The ability to use this forum to organize research studies and formulate educational programs for commands is endless. It could serve as a clearinghouse of information for all members of the military seeking forensic information. This unique office could partner with the Armed Forces Center for Child Protection and the Armed Forces Institute of Pathology to hold an annual educational convention for military healthcare providers.

A cadre of military forensic specialists could be assigned to dispatch teams in times of local, national, or global disaster. During war or conflict, they could be deployed to overseas sites to provide forensic support, human remains collection and identification, and response to bio-terror events. During peacetime their primary mission would be that of training, education, preventive care, consultation, and evidence collection. These teams would be the military experts on clinical forensic examinations. Also during times of peace, forensic nurses must maintain their subspecialty skills. This is easily accomplished through seminars, collaboration with civilian counterparts, and appropriate billet assignments.

Conclusion

Sekula states "Healthcare personnel can no longer opt out of involvement in the process of assessing for victimization, proper collection of evidence, documentation of cases, and preservation of the chain of custody of evidence."⁽¹³⁾ This same directive must be applied to military healthcare providers as well. Forensic nurses should be afforded the right to stand alongside fellow medical professionals in the military healthcare arena and be counted.

Their contributions are already realized, but their potential has not been adequately explored.

References

1. Stevens S. Cracking the case: your role in forensic nursing. *Nurs.* Nov 2004;34(11):54-56.
2. Goll-McGee B. The role of the clinical forensic nurse in critical care. *Crit Care Nurs Q.* May 1999;22(1):8-18.
3. Childers D. Forensic nursing, moving between the medical and legal worlds. *Nursing in Virginia* [<http://www.nursinginva.com/winter2006/forensic-nursing.htm>]. Accessed March 2, 2007.
4. Lynch VA. Forensic aspects of health care: new roles, new responsibilities. *J Psychosoc Nurs Ment Health Serv.* Nov 1993;31(11):5-6.
5. Ledray L. Sexual Assault Nurse Examiner Development and Operation Guide: U.S. Department of Justice Programs, Office for Victims of Crime, Washington, DC.; 1998.
6. Gilson JA. The Virginia Supreme Court case: forensic nursing comes of age. *On the Edge*; Summer 2002;8(2):1.
7. Benak L, Crane P. Forensic nursing: a global response to crime, violence and trauma. *On the Edge*; Winter 2006;12(4):2p; Winter 2006.
8. Winfrey ME, Smith AR. The suspiciousness factor: critical care nursing and forensics. *Crit Care Nurs Q.* May 1999;22(1):1-7.
9. Clements PT, Mugavin M, Capitano C. Mentorship in forensic nursing research: promoting the next generation of forensic nurse scientists. *J Forensic Nurs*; Fall 2005;1(3):129-130, 132.
10. Chamberlain H, Stander V, Merrill LL. Research on child abuse in the U.S. armed forces. *Mil Med*; Mar 2003;168(3):257-260.
11. Rentz ED, Martin SL, Gibbs DA, Clinton-Sherrod M, Hardison J, Marshall SW. Family violence in the military: a review of the literature. *Trauma, Violence, & Abuse: A Review Journal*; Apr 2006;7(2): 93-108 (36 ref 3 bib).
12. US Military A. Military Domestic Problems: Part IV - Family Violence. <http://usmilitary.about.com/od/divdomviol/l/aadomviol1.htm>. Accessed January 5, 2007.
13. Sekula LK. The advance practice forensic nurse in the emergency department. *Topics in Emergency Medicine*; Jan-Mar 2005;27(1): 5-14 (18 ref).
14. Levit K, Smith C, Cowan C, Lazenby H, Sensenig A, Catlin A. Trends in U.S. health care spending, 2001. *Health Aff (Millwood)*. Jan-Feb 2003;22(1):154-164.
15. Yu W, Ravelo A, Wagner TH, Barnett PG. The relationships among age, chronic conditions, and healthcare costs. *Am J Manag Care*; Dec 2004;10(12):909-916.
16. Bilmes LS, Joseph. The economic costs of the Iraq war: an appraisal three years after the beginning of the conflict http://papers.ssrn.com/sol3/papers.cfm?abstract_id=832646. Accessed February 15, 2007.
17. Birk S. Emerging specialties expand opportunities. *American Nurse*; Oct 1992;24(9):7.

LT Ortiz is a perioperative nurse at Naval Medical Center Portsmouth, VA.

This article is reprinted with permission of *Military Medicine: International Journal of AMSUS*. Copyright by Military Medicine, Vol.173, No. 1, P 42-46.



“All They Have Is Each Other”

Saigon fell on the last day of April 1975 ending the Vietnam War and triggering a mass exodus of both Americans and selected South Vietnamese personnel and their families who had been trapped by the North Vietnamese offensive. Marine helicopters flew out to sea to land their passengers aboard carriers and amphibious assault ships lying offshore. But waves of Vietnamese military helicopters packed with refugees followed in their wake seeking any vessel that might receive them.

Following this initial onslaught of airborne refugees, another wave appeared off the South Vietnamese coast crowded aboard anything that would float. These people were even more desperate. Many had been at sea for several days and suffered from hunger, dehydration, seasickness, and eye infections. Legions of displaced Vietnamese had suddenly and unexpectedly become wards of the United States.

To deal with the crisis, temporary camps were assembled in Guam, Camp Pendleton, CA, and Fort Chaffee, AR, where the refugees could be “processed,” housed, fed, clothed, and given medical care until a more permanent solution could be found to absorb them. Many of the medical personnel who staffed these facilities were from the military medical community.

While at her first duty station, Naval Hospital Philadelphia, LTJG Odette Willis was given 30 days’ notice that she might be assigned temporary additional duty, location unknown. Shortly thereafter, she flew to Guam to help staff the Naval Hospital. South Vietnamese refugees were on their way.

We arrived in Guam about 3 o’clock in the morning and were taken to the hospital. At 4 o’clock the hospital supervisor said, “Okay, here’s the situation. You are going to be working with Vietnamese people who are being brought in and need medical care. We have three shifts. The day shift is 10 hours. The evening shift is 10 hours. The night shift is 8 hours.” My specialty was medical-surgical so I ended up working on the acute care med surg unit.

The hospital had three units at the time. The communicable disease unit housed patients who had anything contagious, such as TB, dengue fever, malaria, typhoid, and typhus. We also had a basic medical-surgical ward and a pediatric unit. For the 3 months I was there, we had a total of 598 patients between the three units.

Ours was not the only medical facility on Guam. The hospital at Anderson Air Force Base took some of

the load. Camp Asan was also opened, as well as clinics at what became known as “Tent City” at Orote Point.

Most of the refugees who arrived in Guam were those who had come aboard ships. Some had crowded onto tankers. When they opened the hatch of one of the tankers, I saw a sea of people. It looked just like someone had opened a can of worms with body after body tangled together. Some of these vessels had been at sea for 30 days before they got to Guam. The refugees were pulled from the ship’s hold and taken to Tent City.

All patients who were dehydrated or ill and required hospitalization came through us. Among the first few people evacuated from South Vietnam were the wealthy. They had brought suitcases filled with money—not clothes, not food—but money. But most of our patients were peasants with very little or no education. Many were elderly. We saw everyone from

newborns to people over 100. Based on interpreter reports, several of our patients were near or over 100 years old!

During my first night at the hospital, I put in IVs, inserted Foley catheters, put down naso-gastric tubes. In fact, I learned more nursing skills the first night I was there than I had in the 2 years I was at Philadelphia. These people were in frightful condition. They were so dehydrated, we were hanging one IV an hour on some of them.

Many people arrived who had been separated from their families. Every person brought to a camp had his or her name listed in English, Vietnamese, Cambodian, Laotian, or Korean because all those nationalities were represented. Lists were printed every day and posted. People stood in front of those lists for hours reading the names to see if anybody was related to them. And if they were, officials set up a camp-to-camp transfer.

I witnessed many reunions. In my journal I wrote about two old women in their late 60s. "They were walking slowly arm in arm up and down the ward. They help each other in and out of bed and tend to each other's needs. Their families, lost in the shuffle of the evacuation and lost in the shuffle of the refugee camps, are gone. And now all they have is each other."

Most of them were scared to death because they couldn't understand us and weren't sure where they were. All of a sudden they had been uprooted. Now they were in an environment with electric lights, flush toilets, flowing water, and machines they'd never seen before, especially if they had lived in the jungle. Once they got used to us or as they talked to each other over time, they began to understand what was going on and what we were going to do for them. And they appreciated it.

They were scared for another reason. Our hospital was on a hill overlooking Camp Asan and Agaña, which was the capital city and also where the main airport was. Every time a plane landed or took off, it came over the hospital and those people would scatter. They often ended up underneath the beds huddling and scared to death because this was a sound they knew. When a plane came over, it meant a bomb was about to drop on them.

We fed them rice and basic foods for the longest time. If we fed them anything they weren't used to, they ended up with nausea, vomiting, and diarrhea.

A few young teenagers were already in the hospital when I first arrived. One was about 16 years old. She had worms that had actually grown in her lungs, and had been given de-worming medication. Whenever she began coughing, you had to grab a pair of gloves and run to help her. A worm was coming up and it was necessary to help pull it out before she choked to death.

A 14-year-old boy had reached Guam aboard one of the U.S. ships



LTJG Odette Willis and a young refugee. Photo courtesy of CAPT Willis

that had plucked some of the refugees from a small boat. While still at sea and just before they arrived, the boy had a seizure. They brought him to the hospital and he was placed on a respirator and completely monitored. We took care of him for about two weeks but he didn't make it.

Before the child died, his father, a wealthy businessman from Saigon, had shaved his long, straight, shiny hair off as a sacrificial offering for the life of his son. His wife and daughter had thrown themselves onto the floor of the hospital in hysterical tears. The patients outside the room sat quietly, stone-faced. Some were crying.

Another image stands out in my mind. As we began winding down, those OB patients who had delivered their babies were brought to our unit for care after delivery. I tried to teach a mother-newborn baby class through an interpreter. No one had ever tried to teach them how to take care of their

kids. It was something that came natural to them. I had tried to teach them how to bathe their babies, how to feed them, and procedures like that. They laughed and laughed.

One patient had delivered her seventh boy and another her sixth girl. They were all name-tagged as was our custom. Just as we were discharging one of the families, we realized that the mother did not have the right baby. We couldn't figure it out so we took the baby back to the nursery. We finally determined that they had the wrong baby. The mother who had given birth to the boy had the girl. The mother with all the girls had the boy. We swapped babies and made sure everything was correct.

When we were again about to discharge the mother, the mother with the girls again had the boy. An interpreter told us what was going on. Both mothers had all the same sex children. They didn't want the same sex so they simply swapped them. In their country that would have been perfectly okay. The one who had the boys didn't need any more boys to take care of the parents when they grew old. But the one with the girls needed a boy to have a man in the family when the parents got old.

Because the babies were technically born in the United States, we could not allow them to just swap babies so we kept them an extra day and went through a complete adoption process so they could take each other's babies home.

Many years later, I try to share my experiences because it was one of the most rewarding experiences of my life. Not only did I learn far more nursing than I ever imagined, but helping people who wouldn't be helped otherwise was a superb experience. It was hard work and long hours in wretched conditions but it was worth it. ✍️

CAPT Odette Willis served 13 years on active duty in the Naval Reserve, and retired in 2003 with 32 years service. She now teaches nursing at George Mason University in Fairfax, VA.

BUILDING A SEA-BASED MEDICAL SUPPORT SYSTEM

PART III: Medical Support Requirement for Expeditionary Operations

CAPT Arthur M. Smith, MC, USNR (Ret.)



Photos courtesy of author

Casualty evacuation in Gallipoli, 1915

The sick and wounded are perishable cargo whose survival or death is fundamentally affected by the speed with which they are given medical care. The timeliness of both initial treatment and the evacuation of casualties is extremely important. Throughout the history of warfare, successful treatment of battle casualties has always been influenced by the time expended between wounding and the delivery of medical treatment. The early delivery of first aid, prompt resuscitation of vital functions degraded by injury, as well as the implementation of initial stabilizing surgery, are particularly important in this process.

In the setting of expeditionary sea-based operations protracted delays related to extraction of casualties and

their conveyance to afloat medical facilities far offshore may impede the timely administration of surgical care. Since the beneficial results of military surgery are found in correctly timed interventions, any delay in application of treatment to those with potentially salvageable wounds increases the risk of death or serious complicated disabilities among those surviving. In essence, delay in treatment due to evacuation lag is tantamount to denial of care to those who could have survived with early surgery.

Over the Horizon

Within the generic scenario of an over-the-horizon insertion of forces deep into hostile terrain distant from supporting facilities and with no initial lodgment ashore, the provision of far forward medical support can be hampered by small unit isolation, obstacles to tactical radio communication, the dispersion of combatants and casualties, and greatly limited utility of vehicular transportation. The new lightness and mobility of assault forces with their downsized and reconfigured supporting units implies greater dependence upon afloat resources with the expectation of rapid evacuation of sick and wounded to these offshore assets. Unfortunately, small marginally outfitted units will be required first to extract and then evacuate their own casualties, with resultant delays in application of meaningful

treatment of the wounded. Concurrently, consistent with the current mandate for compactness and simplicity of maneuver units, landing force medical units have also been lightened and down-sized. Consequently, despite the fact that operations launched from the littorals could theoretically penetrate some 200 miles inland, the technical capabilities of medical assets have become more constrained.

A lengthy subsequent retrograde evacuation to ships located “over the horizon,” may be a delicate and precarious undertaking, not only in its execution, but in its impact upon casualty survival. In future littoral warfare, air-, sea-, and ground-based missiles, as well as mines and other familiar weapons, may create a tactical environment of unparalleled complexity in terms of land-sea-air interaction, potentially impeding the timely evacuation and medical management of casualties. Furthermore, lengthy over-the-water evacuation may be easily thrown into additional confusion not only from interference by an adversary who may logically recognize sustainment as the force’s Achilles’ heel, but by sea and weather conditions as well.

Perfection in such matters as command, control and logistics, and even readiness of professional and ancillary health care personnel, are fruitless unless the wounded person can receive

timely treatment. (Even in World War I, military physicians understood the importance of time in saving lives. If a badly wounded patient was given adequate therapy for shock within 1 hour of wounding, the chance of living was 90 percent. Survival decreased markedly with time, so that after an 8-hour lapse, survival dropped to 25 percent). In addition, such delays affect the prognosis for initially simple wounds by accelerating the conversion of many into complex, infected, and often life-threatening problems. As is well recognized in military trauma circles, delay in prompt surgical intervention accelerates the development of the "Triangle of Death" among the wounded, encompassing the tri-phasic onset of diminished body temperature (hypothermia), the accumulation of body products of metabolism (acidosis), and the potential for accelerated bleeding (coagulopathy).

An equally important issue is the historically validated reality of potentially concurrent accumulation of large numbers of casualties within the sea-based echelon (many of which may be simultaneously generated within very narrow time intervals) from enemy attacks upon the supporting ships themselves. Historic evidence is provided by significant numbers of casualties borne by ships of the British fleet during the Falklands campaign in 1982. These casualties resulted in 46 deaths and 150 surviving wounded casualties, mostly severe burns, following the bombing of the amphibious ship, HMS *Galahad* at the hands of the Argentine Air Force. (Fire has always been a prominent phenomenon following ordnance explosions within ships at sea.) Likewise, as noted in the after-action report following the Exocet missile attack upon USS *Stark* (FFG-31), the air temperature adjacent to shipboard fires was noted to be as high as 1,200 degrees Centigrade, no doubt explaining the large number of burns and smoke injuries encountered as well.)

These occurrences bespeak the reality of danger on both sides of a conflicted coastline. Consequently, an analysis of casualty generation in littoral warfare requires an appreciation for operational realities within both ground- as well as sea-based echelons. One must assess the problems inherent in developing a continuum between the two and evaluate the capabilities available for managing casualties within afloat facilities.

Developing a Medical System

Construction of a logistical support structure dedicated to maintaining the physical integrity of the "flesh and blood" or human elements of combat systems within an integrated sea base challenges the adaptability and sustainability of operational forces, and requires its own unique form of adaptive medical systems engineering. Initially, a definition of command expectations for medical assets functioning in the joint sea-based environment is required. Subsequent identification of resources within the sea base that are available for enabling joint/combined force casualties to access competent medical facilities must follow. These will allow more realistic implementation by those on site during the conflict, and will drive the activity of planners.

Military planners unfamiliar with the realities of combat wound management often suggest that medical evacuation is but an exercise in logistics in which the number of anticipated casualties, numerical capacity of transport facilities, the time availability of transport shuttles, and the numbers of available beds are the primary consideration. As noted, these thoughts ignore the realities that characterize the unique time and resource requirements of wound care, and by implication the acceptance of an overall increase in deaths, or at least disability and return of fewer personnel to duty. Any new concepts of casualty care must inevitably be factored against the modulating

reality that the disturbed physiology borne by the combat wounded is often tenuous and cannot simply be dealt with by standard logistic formulas which equate the movement of stretcher-borne patients with those used for moving ration boxes.

Changing Casualty Distribution

Within a distributed sea-base context, a large volume of simultaneously generated casualties could easily overwhelm the envisioned limited medical assets ashore. Furthermore, the improvised explosive devices used in the Middle East have shifted the spectrum of wounding. While advances in body armor and its wide deployment have diminished the incidence of mortal wounds of the chest and abdomen, greater numbers of casualties with severe blast and fragmentary neurosurgical injuries to the head, brain, and neck, as well as major blood vessel (vascular) injuries of the extremities, may now survive long enough to reach forward combat unit medical staffs. (65 percent of service members wounded in Afghanistan and Iraq have been injured by blasts and fragments from improvised explosive devices, land mines, and other explosives. The Department of Defense estimated that in 2006 as many as 28 percent of those injured by blasts and fragments had some degree of trauma to the brain.) They would ultimately be transported to a sea-based medical support center, if such were available.

Tactical Evacuation

Cumulatively, for the types of vascular and nervous system wounds anticipated, the limited depth of medical resources ashore would mandate prompt evacuation for the bulk of casualties by air or, when required, by high speed seagoing connector vessels to medically capable facilities aboard large deck vessels of the expeditionary strike group (ESG) ships and MPF(F) units of the sea base. (Note, however,

that the forthcoming LHA[R] ships have no well decks, implying that they require casualty evacuation exclusively implemented by air, or by other yet unproven innovative methods.)

The connectors envisioned for providing intra-theater lift within the sea base, as well as long distance inter-theater lift, include a series of sea lift vessels such as the Joint High Speed Vessel, and air lift via the V-22 Osprey and CH-53K heavy lift helicopter. In 2004, the Naval Warfare Development Command conducted a limited objective experiment to evaluate the suitability of the High Speed Vessel as a medical platform. Unfortunately, surgical interventions aboard the ship were precluded by virtue of high ambient vibration, noise levels, and vessel motion (including severe pounding) caused by high speeds and sea state conditions, notwithstanding motion sickness of both patients and staff as well. These findings might clearly affect patient survivability during long range transport aboard these vessels.

Echelons of Care

In the postulated sea-base medical continuum, the most rudimentary echelon of forward-located medical capabilities ashore may be located at a battalion aid station (BAS), known as medical care Level I. During the Vietnam War,

timely evacuation to such facilities was often assumed to be impractical, given delays and the occasional inaccessibility of aid stations due to “cantonment,” whereby troops lived in one location, were transported by helicopter to fight in another, and were then extracted—and so did not carry their bulky BAS with them. Medical aircraft evacuating severe injuries occasionally bypassed these limited lower-level facilities and flew directly to more advanced (Level II) surgical facilities capable of physician-assisted resuscitation, stabilization, and initial surgery to prolong life. There were also more specialized in-country facilities with subspecialty surgical capabilities, major blood-transfusion resources, and advanced levels of nursing support (Level III).

In the sea-base concept, the large-deck amphibious assault ships within the expeditionary strike groups (ESGs), of the LHA and LHD types, and presumably the forthcoming LHA replacement or LHA) containing Level II medical facilities and limited surgical capabilities for stabilizing injuries, will no doubt be designated as “casualty receiving and treatment ships.” Heretofore, each ship has carried a standard Fleet Surgical Team augmentation of one general surgeon, an anesthesia provider, and other contingency medical and nursing augmentees. In reality, as currently outfitted, these large-deck am-

phibious ships could offer only limited surgical capabilities for stabilizing injuries. The primary mission of these ships is to facilitate combat operations; the logistic, space, and mobility demands of casualty care cannot realistically be expected to outweigh their combat and combat-service imperatives. Further, despite the

purported 16 “intensive care” beds, the four surgical theaters of the LHA (and the six of the LHD), 47 ward beds (suspended from vertical chains), and many hundreds of “overflow beds” (if strike group personnel are offloaded), ESG vessels have neither sufficient space nor sufficient casualty-support logistics for sustained treatment of large numbers of casualties. More importantly, they lack adequate numbers of the highly specialized medical and, especially, nursing personnel required for treating the wounds of blood vessels, brain, and spinal cord now being suffered in irregular and urban warfare. (Consideration of Nimitz-class nuclear aircraft carriers as alternate sources for this role is likewise diminished by the reality that they must also not only primarily serve their operational roles but, in fact, are only marginally capable of in-depth care of multiple casualties, in terms of space, logistics, and personnel.)

LPD-17

The current amphibious fleet recapitalization plan involves the ultimate replacement of 11 aging, smaller amphibious landing ships, LPD-4s, and all 12 dock landing ships—LSDs—with new San Antonio class LPD-17s. This new 25,000-ton expeditionary warship—50 percent larger than the next-biggest LPD in the world—is designed to operate in an amphibious patrolling role 25 miles off a defended shore and in a nuclear environment. The ship is said to be capable of transporting 700 troops, with a surge capacity to 800, and receiving contaminated casualties through a specially designed triage center off the flight deck. While it has been widely acclaimed as possessing two operating rooms, a 24-bed ward, and a stated overflow capacity for 100 casualties, the limits of its capabilities for adequately treating combat injuries would again be the breadth of available medical personnel and sufficient available space for handling a sudden



Casualty evacuation via CH-46, Iraq

large influx of seriously compromised casualties.

Limits would also arise from the huge additional space requirements of contingency medical logistic support. Furthermore, combat casualties require large quantities of blood for transfusion, including fresh whole blood with clotting components (the latter is not found in either the LHA or LHD frozen blood repositories).

During the Vietnam War, 10 percent of the wounded required blood replacement, the average being seven units per patient. Thirteen percent of those requiring blood required 11 or more units, some as many as 90, most of which must be fresh blood with clotting components to prevent further hemorrhaging. In addition, combat surgical staffs need wide-ranging vascular and neurosurgical capabilities not commonly found among surgical generalists, as well as 24-hour availability of skilled nursing personnel and specific logistical support and re-supply.

Consequently, notwithstanding their seemingly advanced medical outfitting, the San Antonio class LPD and even the projected LSD(X) do not promise demonstrable value in the initial management of severe combat casualties. Their principal medical role might well be that of secondary casualty-reception facilities for

wounded already treated and stabilized elsewhere.

Level III Medical Care

Facilities for Level III or specialty treatment have been traditionally available aboard T-AH hospital ships. For their part, the two current T-AH hospital ships, although well equipped and quite capable of advanced casualty care when adequately staffed with medical augmentees, are fading into operational obsolescence due to material aging, slow speed, and deep draft (which bars them from littoral waters). It has been suggested that within newly designed ships of the MPF(F) such as the Mobile Landing Platform, or in seagoing platforms provided by the other services, there will be emplaced extensive medical-support “modules” with surgical specialty availability, allowing them to replace the aging hospital ships. These modules, however, would require specialized and trained surgical, anesthesia, and nursing personnel, triage and resuscitation space, equipment, and supplies matched to the risks to which combatant personnel are being exposed, presumably major blood-vessel injuries as well as life-threatening damage to the brain and spinal cord.

Strategic Evacuation

In order to provide a continuous availability of afloat resources within the sea base for care of incoming casualties, and obviate the potential for casualty overload, mechanisms must also be emplaced to further evacuate the initially treated and stabilized casualties from the sea base to higher level medical facilities, perhaps thousands of miles away,

where there would be located even greater competencies for recuperation and reconstruction of sustained injuries. (Indeed, 40 years ago aboard USS *Forrestal* (CV-59), the Navy experimented with carrier landings and takeoffs of C-130 aircraft by conducting 27 landings and launches, including zero winds and headwinds to the maximum weight). While implementation of such innovative aviation experiments is generally impractical, this critical requirement will continue to mandate creative employment of air and/or surface “ambulance” type connector resources. It would also be hoped that some form of in-transit critical care of seriously wounded evacuees, as currently provided under the CCAT (Critical Care Air Transit Team) program, will be available during such strategic evacuation. The experience of the Royal Navy at the Falklands, utilizing ocean survey ships adapted as seagoing ambulances, serves as a useful historic example of ad hoc creative adaptability. Two such ships evacuated 593 stabilized patients from the converted hospital ship *Uganda* over 420 miles to a Red Cross supervised neutral aero-medical transfer point in Montevideo, Uruguay, allowing further air transit back to the United Kingdom, thereby clearing room onboard the hospital ship for new wounded.

In the current “joint level” context, wherein minimal medical facilities are ashore, revised and adaptive mechanisms for medical support of operational maneuvers will now be required to support the paradigm shift in casualty care necessary during unified geographically dispersed or “distributed” sea-based operations in the littorals.✎

CAPT Smith is Adjunct Professor of Military and Emergency Medicine, and Adjunct Professor of Surgery at the Uniformed Services University of the Health Sciences, Bethesda, MD, and Professor of Surgery (Urology) at the Medical College of Georgia.



Casualty transfer in Iraq

IN MEMORIAM

RDML Mary J. Nielubowicz, NC, former Director of the Navy Nurse Corps died on 24 March 2008 at her home in Fairfax, VA. She was 79.

RDML Nielubowicz was born in the heart of Pennsylvania's anthracite coal country, Shenandoah, PA, on 5 February 1929. Coincidentally, this was also the birthplace of musical giants Tommy and Jimmy Dorsey. From an early age, she knew she wanted to be a nurse, and pursued that dream in Philadelphia, where she received a nursing diploma at Misericordia Hospital in 1950. A year later she sought and received an appointment in the Navy. While serving on active duty, she obtained a BS in nursing from the University of Colorado, Boulder, CO, (1961) and an MS in nursing from the University of Pennsylvania (1965).

In her over 35-year career, Nielubowicz saw many changes in the Nurse Corps. When appointed ensign on 28 June 1951, the highest rank a Navy nurse could achieve was captain. She passed this threshold during her career, becoming the first woman selected as a commodore in 1983. Two years later she was promoted to rear admiral (lower half), becoming, at the time, only the fourth Navy nurse to obtain this distinction.

In 1951, BUMED did not yet have a nursing division. Twenty-four years later, RDML Nielubowicz would serve in BUMED's Nursing Division as Deputy Director of the Nurse Corps and head of its Personnel Actions Branch.

RDML Nielubowicz's other career duties included charge nurse at naval hospitals in Annapolis, MD; Guantanamo Bay, Cuba; Philadelphia, PA; and Portsmouth, VA. She


also served as senior nurse at Branch Clinic Iwakuni, Japan; Naval Hospital Cherry Point, NC; and Naval Regional Medical Centers in Guam and Long Beach, CA.

RDML Nielubowicz was selected as the 10th Director of the Navy Nurse Corps (and 15th leader of the Corps) in 1983. While serving in this capacity she also acted as Deputy Director of Health Care Operations.

During her career, RDML Nielubowicz was awarded the Navy Commendation Medal, Meritorious Service Medal, and Legion of Merit. Her service medals included the National Defense Medal and the Humanitarian Service Medal.

She was a member of the American Nurses Association, the National League of Nursing, the Virginia Society for Nursing Service Administrators, and Sigma Theta Tau. RDML Nielubowicz, who was of Polish heritage, was also an active member of the Thaddeus Kosciuszko Foundation, an organization established for strengthening the understanding and friendship between the peoples of Poland and the United States.

RDML Nielubowicz was a nurse, through and through, recalls former Nurse Corps Director, RADM Frances Shea Buckley. "She not only took care of her patients, but was genuinely concerned for the welfare of her subordinates. And like every good senior nurse and leader, she listened to and heeded the advice of her junior nurses." Without doubt, "Admiral Niel," as she was affectionately called, was

a beloved and trusted Nurse Corps Director. She will be especially missed during this year's ceremonies marking the centennial of the Corps she served and loved so well. 



RADM Maxine Conder, Director of the Nurse Corps, meets with future Directors CAPT (later RDML) Mary Nielubowicz (left) and LCDR (later RADM) Joan Engel.
BUMED Archives

Navy Medicine 1928



A sailor with arthritis in both knees weaves a rug under the supervision of two nurses at Naval Hospital Brooklyn, New York. Photo from BUMED Archives

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
ATTN: M09B7C
2300 E STREET NW
WASHINGTON DC 20372-5300

Periodical
Postage and Fees Paid
USN
USPS 316-070

OFFICIAL BUSINESS

